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ORIGINAL ARTICLES

MUTILATED ARCHES*

BY DR. E. H. MAUK, SAN FRANCISCO, CALIF.

WHAT I have to say to this Society is prompted largely by a thought which has been brought to my attention several times of late months, namely, that as dentistry breaks up into specialties, there is a marked tendency of the specialists to drift out of touch with the other branches of the profession, and a few instances will be noted which seem to bear out this thought.

Because the exodontist usually loses sight of his patient after his services are rendered, he does not always leave the tissues in the most favorable condition for prosthetic work. We are getting in closer touch with the exodontist, however, and it is hoped that the prosthodontist will more and more make it a point to accompany his patient to the exodontist and confer with him as to what is expected as a foundation for prosthetic work following extraction.

A parallel case is that of the periodontist. He is so concerned with the instrumentation, medication and the pathology involved that he often overlooks the physical forces that cause and may maintain some of the conditions he seeks to remove. He does not always recognize the possibility of effecting a cure by correcting the occlusion, or the influence of a corrected occlusion in maintaining the investing tissues in a state of health. A similar condition exists with the prosthodontist and the orthodontist. The prosthodontist is at fault in overlooking the possibilities of orthodontia in connection with actual replacement of teeth missing from mutilated arches. It is quite conceivable that many patients instead of needing restorations need

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orthodontia to close up the spaces. The prosthodontist is also at fault in overlooking the need for continued oral hygiene. There we touch the field of preventive dentistry, through the work of the dental hygienist in prolonging the usefulness of restorations that may be made in the mouth. It is too much to think that because sound engineering principles are observed in placing a restoration it may last indefinitely without further aid or treatment, especially prophylaxis.

Now let us extend the comparison into another branch, that of orthodontia. While my knowledge of this field of practice is not extensive, it seems to me that there is a tendency for the orthodontist to neglect what we may term the "older patients." The call of the young patients is so great and means so much to their future there is probably a tendency to overlook the need of the patient more advanced in years, and who is in a bad predicament in many instances. It seems to us who are constantly in contact with humanity in the clinic, as we are every day in the year, that these things are perfectly appalling. I am sometimes discouraged and my sympathies are aroused to the highest degree by the condition of people coming there for treatment. We seem to see all the afflicted people in the world, from the standpoint of dentistry. We get discouraged looking at the bulk of it. And yet frequently we too do not recognize the fact that the orthodontist could work with the prosthodontist in helping him prepare his field for the reconstructing or engineering work. So between preventive dentistry and restorative dentistry there should be a common meeting ground and the bond should be made stronger by both branches of the profession. While the orthodontist and the prosthodontist are probably the most widely separated of all the specialists, there is a common ground where they should meet and work together, and the basis of this must be the best interests of the patient. Our older patients often need tooth movements, if I may put it that way, in conjunction with reconstructive work. We are at a loss sometimes to know what to do with these patients. The orthodontist is so concerned with the young people and his time is so crowded he cannot take these patients, or possibly he may not be familiar with the problems of the prosthodontist. I do not know if I am correctly informed, but I understand many orthodontists refuse to handle patients other than children. It perhaps would be a desirable thing for the orthodontist to limit his practice to children, and if so then there is a field between orthodontia and prosthesis somebody must take care of. We are having unpleasant experiences in prosthesis in some parts of the country. Some phases of our work are being done for the prosthetist by people who are not prepared to do the work and sometimes patients are referred directly to commercial laboratories for impressions and dentures made without even going to the dentist. This may undermine the well recognized branches of dentistry. That may take place in your specialty as well as in prosthesis. In other words, if my assumption is correct that these patients are neglected by the orthodontist, somebody will do it for them, and they may not be people authorized or prepared to do it. It is rapidly coming to be recognized that all restorative work (from the single crown to the entire denture) rests on the same fundamental basis as ortho-

dontia, i.e., occlusion. Perhaps to posterity the question of mutilated arches is not so important, but to the individual who has passed his teens it is as serious as malocclusion is for the child. It is just an older stage of a condition that has not been corrected, and the patient is seeking help. They come into the clinic with these wrecked arches, and the wrecked arch and the maldeveloped arch result in the same thing ultimately, i.e., impairment of function, partial or total; abnormal appearance, loss of facial dimension, and that train of symptoms that Monson of St. Paul has clearly pointed out: the compression of the lips, bagginess of facial tissues, and what is more serious, there may be an involvement of the tissues of the throat and even of the hearing, due to lost facial dimension, encroachment of the condyle on the canal; breaking down of the posterior wall of the glenoid fossa permitting of this encroachment on the canal. The astonishing thing is that some cases of chronic deafness have been cleared up when the rhinologist and the aurist have given them up, simply by reconstructing dentures that open the bite wide enough. I do not know what new things the teeth or the dentist will be blamed for, but it is evident that by loss of teeth and loss of function we may have throat involvement and impairment of hearing, as well as the more familiar results.

I had thought we might classify cases where the prosthodontist and orthodontist might confer and work together, but I was without precedent in making any classification, so I have attempted to bring a few concrete instances in the shape of models showing cases from slight involvement up to those where there is no hope for orthodontic intervention.

(a) This is of a young man wanting a bridge. The canine is missing. It was found to be impacted and he refused an operation. The lingual aspect of the premolar points toward the lateral. In such cases the orthodontist can rotate the premolar so that a bridge can be inserted in normal position.

(b) Another case, possibly in the next degree of interrelation where the orthodontist and prosthodontist can work together. Mutilation of the arch by extraction has progressed to quite an extent and here is need for extensive reconstruction. In the maxillary arch the canine needs moving before reconstruction can be successfully done, and orthodontic intervention is required in the mandibular arch. We have men in the dental clinic who look at these abnormalities and can advise us and can do limited orthodontic service under restricted financial conditions, but where can the patient in private practice, needing this form of work, turn unless he goes to some personal acquaintance among the orthodontists? This patient is twenty-two years of age.

(c) The patient is a young lady, a sister of a student. Fine looking, about twenty-one years of age. Some mandibular teeth are lost. Second maxillary premolar erupted lingually. Before any restorative work is done she needs orthodontic help. It is evident what we would like to have done, and in placing those teeth in harmony with the outline of the arch it should be considered that the curvature of the occlusal plane is wrong, especially on the left maxillary.

(d) Woman about forty years of age. Mother of a family, rather nice appearing. What we can do for her at this age is so limited I am ashamed

to admit it, and hope I will not be misunderstood, since I will take for my part of the profession a just share of the blame. Such things as this are a challenge to the profession which they must recognize. It is a deplorable condition, and I cannot see that we are doing real preventive dentistry until such things are detected and remedied in childhood, through education of parents, public school examinations, and early treatment. That case is but one degree removed from cleft palate. The prosthetic restoration of cleft palate is practically a lost art today, because surgery has made such strides along that line, and palate prosthesis is seldom needed. This case is past the help of the orthodontist, I think. We can only say there is nothing to do but extract the mandibular teeth and make a full denture. The facts at best are very discouraging.

The point of all this is that we are drifting apart as we specialize, I know I get out of touch with things that are developing in dentistry in general. I thought when Dr. Suggett asked me to address this body of men it would be entirely foreign to my work. I am thankful the opportunity came, however, for it is giving me a new viewpoint. So instead of drifting apart, let us have a closer conference relations all along the line. Through a closer cooperation there may be opportunity to look more fully after the interests of the patient. The orthodontist comes in contact with both parents and children, the prosthodontist only with the parents. If we are going to cooperate in these reconstruction cases it is necessary for the orthodontist to appreciate some of the prosthodontists' problems to be prepared to work with him in his efforts to put the teeth in proper position before anchoring restorations on them or using them as supports, either removable or fixed. So we must have study of both sides of this fundamental thing, namely occlusion.

I thought you might be interested in that phase of occlusion which has developed in recent years. I refer to spherical occlusion. This seems the logical foundation on which to build our modern theories of occlusion. It is not out of harmony with any other system. Men are blinded by prejudice and lose sight of many fundamental facts. Monson, of St. Paul, has done more than anyone else to make this theory available. Williams, Needles, of Pueblo, and in Europe some of the French have developed this same theory, and it seems fundamentally correct. There is no simpler diagrammatic figure on which to build occlusion than the surface of a sphere.

(Dr. Mauk explained the Monson theory of occlusion, showing the use of the Monson articulator in determining the proper relation of the arches, as it might benefit the orthodontist.)

I would commend the instrument to you in your study of occlusion.

I want to thank you for the privilege of appearing here, and for the attention I have received.

DISCUSSION

Dr. Robert Dunn.—I am very glad that Dr. Mauk selected this subject for his discourse as it offers an opportunity to endeavor to correct in the minds of some, erroneous ideas as to the attitude of the orthodontist toward others in different branches of the pro-

fession and I believe I voice the sentiments of most of those present here, when I say that the orthodontist has ever been ready to confer with those practicing other branches of dentistry for the common good of the public and that the seeming indifference and aloofness is apparent only and may in a measure be due to the orthodontist's being thrust in that position by the indifference of the general practitioners and specialists of other branches of dentistry and a lack of conception on their part of the true principles of orthodontia, and may I be so bold as to state also a lack of intelligent consideration of the subject.

I do not recollect a single time where I have been consulted by a prosthodontist as to what might be done in assisting in restoring a case, and yet I am always willing to do what I can to help.

There can be no question as to the needs and the practicability of the undertaking of orthodontic treatment in cases of those so-called older patients particularly when in conjunction with restorative work and I do not understand if it is true, why some orthodontists sidestep such cases unless it is because they are allowing themselves to be deceived as to the response and outcome of such cases under intelligent treatment. It has been my experience where restorative work has been properly constructed and placed that the results and satisfaction to all concerned, have greatly exceeded all expectations. I have found that older cases respond practically as quickly as the younger ones and very few instances where failures have resulted. In fact the percentage of success is far greater than in the younger cases.

As to the cooperation of the dentist in restorative work: I have had a little experience in working with the general practitioner, and find that he usually works along the lines of least resistance, which the orthodontist cannot do, and when offered the opinion of the orthodontist, the advice is usually ignored, he apparently being more concerned with what the orthodontist may be paid for his services than in the beneficial effects of the treatment to the patient.

I should like to see a closer relation between the orthodontist, the prosthodontist and the general practitioner, but as Dr. Mauck says, we seem to have drifted apart, and why? The whole thing harks back to the one great deficiency in dental education, namely, inadequate and improper teaching of fundamentals to the undergraduate student. Orthodontists have had the experience when meeting in common with representatives of other branches of dentistry, that when the orthodontist presents a paper specialists in other lines move out; if the periodontist presents something in his specialty nobody remains but the periodontists. What shall we do to reach the professional man? How shall we get them to see it is important for them to know certain things about our work, and for us to know something of their work? It is a question. As I have said, it must be brought about through the more thorough teaching of fundamentals in our institutions of dental learning.

I did not get as much out of the description of the Monson articulator as I should have liked. This is not because it was not well given, but because I could not absorb it. I received many good points from both Dr. Mauk's and Dr. Wadsworth's papers on my hobby, "Vertical Development."

What is the object of a ball and socket joint? To allow the free use or movement of a member, as the mandible, and assist in preventing that member from slipping out of proper position. Why do you have the curve of Spee? To help sustain the teeth and mandible in their proper positions and to withstand the forces entering into the processes of mastication, also take into consideration the point Dr. Wadsworth brought out in reference to the forward and backward thrust and which is controlled largely by your vertical relations and curve of Spee. When we have solved some of these problems there will be less difficulty in sustaining our work.

Dr. C. S. McCowen, Palo Alto, Calif.—There has been a tendency in the past for specialists in dentistry to drift out of touch with the other branches of the profession, but we are rapidly changinig in this respect. Cooperation of specialists in all branches of dentistry, the general practitioner, and the different branches of medicine, is necessary, as they are all interdependent. I believe this relation has been established to a greater extent

than ever before. It is noticeable in our meeting and in our literature; and outside of dental and medical professions, I think we would profit by an address on engineering principles. We cannot as orthodontists do without the help of any factor that will in any way aid us in our work.

The work of the orthodontist is mostly with the younger patients, but if older patients need corrective work and such work would be of great benefit to them they should have it, and here is often where the prosthodontist and orthodontist work together. We can move teeth in better alignment for prosthetic work, or where missing teeth have to be supplied in the event of not being able to attain reasonably good results by closing spaces. To close spaces in some of these mutilated cases would mean impairment of function and distortion of facial muscles and tissue.

I have in mind cases where the molars were all missing on one side of the mandible, and restorative work by artificial means was necessary.

Establish a closer union between specialists of dentistry and medicine by inviting them oftener to our meetings, consult them on their favorite branch, and when in turn we are asked advice, give it freely, and we may in that way solve many problems in our efforts to reach ideal results.

Dr. A. A. Solley, San Francisco, Calif.—I have enjoyed the paper immensely. One of the things that impressed me was Dr Mauk's criticism of the orthodontist's neglect of the older cases. That is a just criticism. Few of us give consideration to these patients, and as Dr. Dunn has said the work that may be done for them is wonderful. I find myself doing more and more of this work. It can be done more successfully possibly than the services for some of our younger patients.

One thing I have learned at this meeting is that there are many misconceptions as to what the ideals of orthodontia are, and they should be corrected whenever they present themselves. There are men in all communities who give due and just attention to the older cases. In Berkeley, I find more of the boys coming in all the time with their prosthodontic troubles, and hardly a week passes that some of them do not ask help in their problems. The reason there has not been more done for the older patients, I believe, is this: Until the last few years most of our appliances did not lend themselves to the proper treatment of such cases. But now we have improved appliances permitting of inconspicuous treatment.

Dr. J. Camp Dean, Oakland, Calif.—I should like to ask Dr. Mauk if this segment of a circle is recommended by Monson, and what the diameter of the circle would be, and whether those segments would be available for use in our offices.

Dr. Mauk.—The eight-inch sphere with a four-inch radius is used by Monson and the men working with him as a starting point. We expect to get some of these segments made up for our own use. They may now be had at St. Paul. There are three different sets. I would think you would merely want the segment of the circle to test the relative curvature. This hemisphere shown is spun on a lathe. The four inch radius is the experimental basis.

Dr. A. E. Scott, San Francisco.—It seems there is a great deal of discussion and some confusion about the treatment of the older cases. I think that should be cleared up as far as possible. To treat an adult patient, as most of us probably do occasionally, it should be with the full understanding that we are doing more or less mechanical work which may be compared to the act of a surgeon or orthopedist when he approximates two bones for the purpose of having them knit. Also, we may move teeth for prosthetic reasons where it is fully realized, we are performing a purely mechanical act. But that is not my conception of orthodontics. My conception is that we take cases comparatively young and by a process of artificial stimulation produce a growth and development of the jaws. This is not a purely mechanical problem, except the mechanics involved in producing the stimulation.

Dr. Fury, Long Beach, Calif.—I enjoyed the essayist's paper, although his remarks and criticisms have left me a bit in the dark. Are we to understand that in all cases

regardless of age bony development can be brought about, or is it just a mechanical movement of the teeth? I have in mind one of the cases referred to by Dr. Mauk where the patient was about forty years of age.

Dr. John R. McCoy, Los Angeles.—I have enjoyed the paper, and the discussion which has been particularly interesting. I do not regard with favor, treating adults, except in selected cases. We can help the prosthodontist, and he can help us, but I am afraid I have not been consulted as much by the prosthodontist as I might have been, and for that reason, probably have not treated the number of adult cases that I might have. As Dr. Solley has stated, with the newer forms of appliances, we can treat adult patients to better advantage, but I think unless we select our cases, we must expect a lot of grief, that is, the results obtained will be far from satisfactory.

Dr. C. C. Mann, Seattle.—I agree with Dr. McCoy that you will have much grief unless you select your adult cases very carefully. But wherever we are able to assist a practitioner of any other branch of dentistry I think we should do so if within our power.

Dr. Robert Dunn, San Francisco.—Of course, it is assumed that the orthodontist has enough intelligence to discriminate between the cases he should treat, and those he should not.

Dr. W. R. Dinham, Portland, Oregon.—In my experience in Oregon, the presentations by the orthodontists before Dental Societies are received with but little interest. The profession seems interested in the results obtainable, but not in the science of orthodontia itself. I think the orthodontists of the future will have a good field, in assisting the dentists in various types of bridgework, in the matter of the alignment of the teeth. I have in mind a patient thirty-eight years of age who had lost the first and second molars and had a bad impacted third molar. The dentist had advised the extraction of all three teeth. I said I thought it possible to bring the third molar into position so that some bridge restoration could be made. It worked out very satisfactorily. The third molar was moved into about the position of the second molar, and the opportunity for satisfactory bridge construction was gained. Meantime, she found practically the same condition existing on the other side, and we are attempting to help in that too. Such a service gives mastication ability on both sides. She might have lost all three teeth and only partial plate restoration would have been available.

In the future, orthodontists in clinics and before dental societies, would be received more favorably if they showed the possibility of closer cooperation with the other members of the profession in arranging teeth for bridge restorations, etc.

Dr. Mauk.—I am encouraged in thinking the suggestions I made may prove of value. I do not want to be misunderstood, as coming here to make invidious criticisms. I simply have pointed out certain apparent tendencies and have repeated reports that have come to me of lack of opportunity for cooperation in doing things for patients, and the cooperation between specialists. This tendency to drift apart should be combated. I do not want to be quoted as making an unpleasant criticism. Our whole subject of dentistry assumes such vast proportions no man can hope to encompass them all, but we can at least keep in touch with each other. I was interested to note Dr. Dunn put the age limit at which patients might be successfully treated at sixty years. The point I wish to make is that when the forces responsible for malformation are corrected or removed then the teeth seem to fall into line almost immediately, and one of the results of this is the restoration of facial dimension by opening the bite. The anterior teeth move back to their proper places, and that is quite in line with the conception of modern orthodontia. They move there if allowed to, and if they are not forced away from where they belong.

It is considered quite a popular sport, and seems always to be open season, for any one to criticize dental college teaching and the more of it we have the more of it we are able to stand. By and by these criticisms may roll off our backs like water off the back of a duck. This criticism may be helpful in the end. However, try and extend a helping hand.

Referring to the subject of deafness, and throat diseases no one knows yet just what happens when the loss of facial dimension causes deafness. The condyle encroachment on the meatus is only a visible symptom. It is hard to tell just what takes place there.

One of the strongest things the prosthodontist can say in support of the study of occlusion and for the benefit of orthodontia is brought out in partial denture work which is recognized as one of the most difficult problems we have to deal with. When the occlusion is balanced partial dentures are frequently retained in place without clasps. It goes to support the assumption that once the lines of force are correct the teeth will remain in their proper positions.

It seems to me the orthodontist would do well to study the mechanics and physics of occlusion more than he has done heretofore. You are concerned with placing the teeth while bone is at a formative stage, and some conception of the basic fundamental geometrical figure for occlusion, seems to me would be an extremely necessary thing. No one case, say an eight inch sphere, is absolutely correct, but it is at least a starting point.

Dr. Scott brought out an interesting fact, namely that the handling of older patients is a mechanical procedure. In dealing with your young patients you are practicing a phase of preventive dentistry. With the older patients we are simply compromising and doing something to help, and what can we do with them unless the orthodontist and prosthodontist get together on these mutilated arches? Some say select the cases. Perhaps it is not meant to take only the easy ones and exclude the bad ones. I suppose it was meant if there be no orthodontic help the prosthodontist must have extractions done and tooth restorations made. I feel very often that extraction is the best solution of the problems presented by some of these mutilated arches. Otherwise the time comes when there is nothing left to work on. Sometimes I think the dentist of forty years ago who followed the extraction method and made dentures for his patients did better for them than we do by compromising by means of partial dentures. I want to tell you I will do my part as far as possible in training students or in stimulating them to keep in touch with the various departments of dentistry. I think our other institutions of learning will cooperate in a similar way.

SIMILARITY OF MALOCCLUSION IN FAMILIES*

By Charles R. Baker, D.D.S., Evanston, Illinois

THE cases that I have to present are instances of similarity of malocclusion occurring in two children of the same family. I had originally intended to report only the first pair of cases that I will show, feeling that these were unusual enough to be of sufficient interest to warrant presenting, but later decided to add a few additional cases illustrating conditions which are probably more or less common in occurrence. My only thought in making this report is that possibly it may suggest an idea to some person who may be able to develop statistics and facts that may eventually be of some

Fig. 1.
R. S. Age 10 years
C. S. Age 8 years, 2 mos.
6 years, 5 months difference in age.

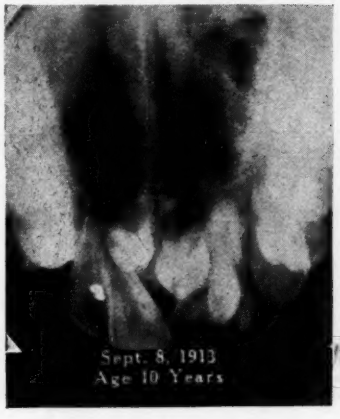


Fig. 2.

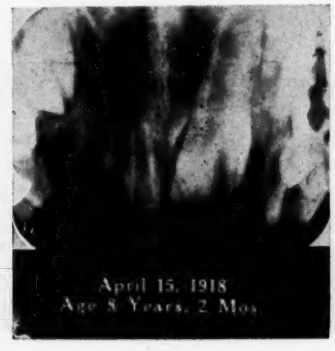


Fig. 3.

Fig. 4.

scientific value. I regret that I have been unable to obtain more complete records of the occlusion of the parents and other relatives of these children.

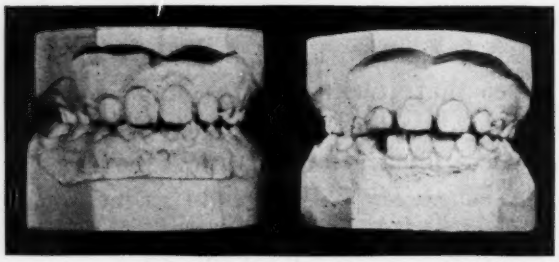
Fig. 1.—R. S., boy, ten years old, September, 1913.

C. S., his sister, eight years and two months old, April, 1918. There is a difference of six years and five months in the ages of these two children.

*Presented at the meeting of the American Society of Orthodontists, Chicago, Illinois, April 9-11, 1923.

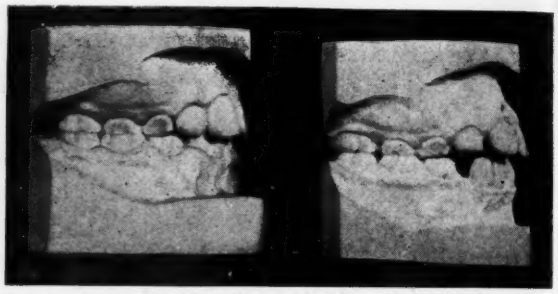
You will note in both cases that there is a lack of development of the maxillary arch and insufficient room for the maxillary right central incisor, which is unerupted.

Fig. 2.—R. S. Here is shown the unerupted maxillary right central incisor and also two unerupted supernumerary teeth.



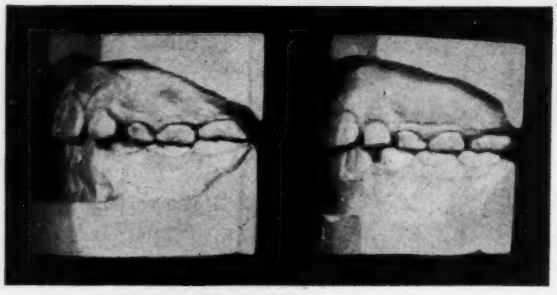
M. R. V. R.

Fig. 5.



M. R. V. R.

Fig. 6.



M. R. V. R.

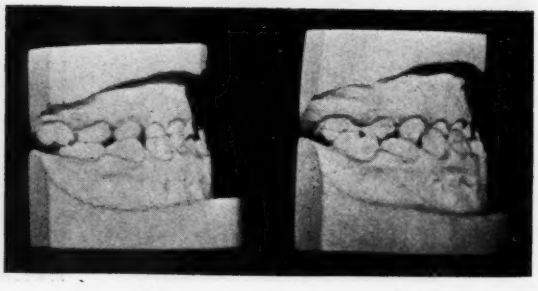
Fig. 7.

M. R. V. R.

Fig. 8.

A B

Fig. 9.



A B

Fig. 10.

Fig. 3.—C. S. Film showing unerupted maxillary right central incisor. There is also a shadow on this film that later proved to be a developing supernumerary tooth.

Fig. 4.—C. S. Film showing unerupted supernumerary tooth.

In both cases the maxillary arch was increased in size which allowed

the maxillary right central incisor to erupt. In the Case of R. S., the supernumerary teeth were removed soon after their discovery. Case C. S. now has an appointment for the removal of the supernumerary tooth present in her case.

The mother of these children reports that a cousin, a child of the father's brother, also had one or more supernumerary teeth.

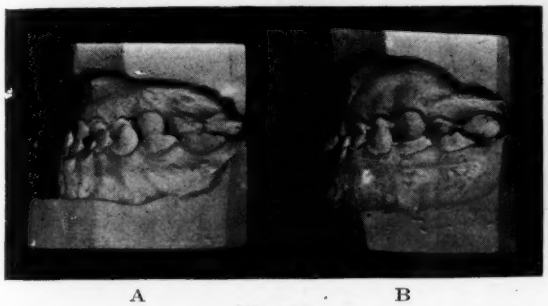
The next pair of cases show similarity of malocclusion of two sisters, aged nine years and four months and eight years and two months respectively, due to the premature loss of all of the deciduous canines.

Fig. 5.—Front view.

Fig. 6.—Right side view.

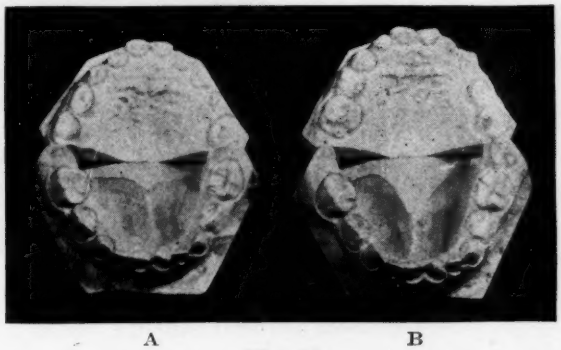
Fig. 7.—Left side view.

Fig. 8.—Occlusal view.



A B

Fig. 11.

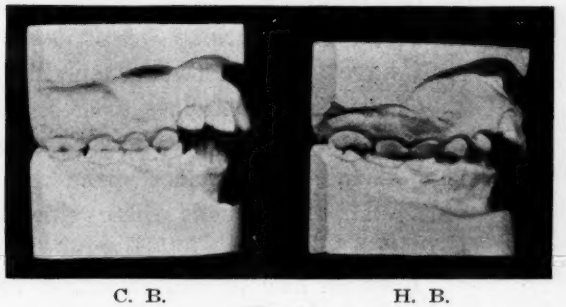


A B

Fig. 12.

A B

Fig. 13.



C. B. H. B.

Fig. 14.

The next pair of cases are twins. These little girls were six years and three months of age, and are so much alike in appearance that I cannot tell them apart although I have known them for about six years.

Fig. 9.—Front view.

Fig. 10.—Right side view.

Fig. 11.—Left side view.

Fig. 12.—Occlusal view. Note that the mandibular left central incisor in each case is in torsiversion.

Fig. 13.—Here note the defects in form of the maxillary left central and right lateral incisors in both cases. This abnormal structure is congenital.

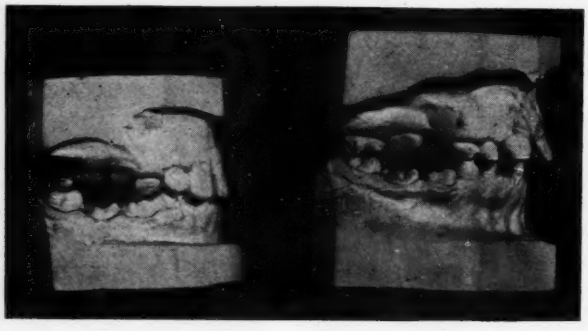
While these are cases of mesioclusion, both parents have well formed

arches and practically a normal arrangement and fitting of the teeth. The father's face, however, would give the impression that his teeth were in mesioclusion unless one examined his occlusion and found that this was not the case.

Fig. 14.—This picture shows the malocclusion of brother and sister, the difference in age being one year and eleven months.

Fig. 15.—This shows the malocclusion of two brothers, A. S., age nine years, and D. S., age eight years and ten months. D. S. is two years and one month older than A. S.

The reason for showing these cases is not on account of the positions of the teeth but because of teeth congenitally missing. There are thirteen



A. S. D. S.

Fig. 15.

teeth absent in the case of D. S., namely, eight premolars, four second molars and one maxillary lateral incisor. In the case of A. S. four teeth are missing, all second premolars.

I have also had two other children of this same family as patients. In one case, eight premolars are congenitally absent. In the other case, both maxillary second premolars were unerupted and there was no room for them in the arch. After space was made, they assumed their normal positions. The mother of these children has a number of teeth congenitally missing.

I would like to call attention to the fact that in these cases the permanent first molars have erupted apparently to their normal occlusal plane although there is marked lack of development vertically in the deciduous molar region. This suggests the statement also that lack of occlusion and lack of vertical development in the deciduous molar region is not necessarily an indication that one or more of the premolars are not present, for in many such cases, they are present and ultimately assume their normal positions.

SOME NOTES ON PRACTICAL CHILD PSYCHOLOGY*

By Dr. Olga Bridgeman, San Francisco, Calif.

THERE are many aspects to the study of the child mind, each requiring special consideration. Every child is born into the world with numerous impulses which never have to be learned, and in this respect all infants of all races and nations are very similar. Whether the infant is a young Bushman or a young Anglo-Saxon, the similarities of impulse-directed action are much more significant than are the differences. But in addition to native impulses toward action, common to all young human animals each child is endowed further with special qualities, abilities and limitations, which are his as a result of his inheritance from his race and from his family. The historical and cultural environment of his people has resulted in pronounced racial differences and has set limits which, to a definite degree, determine what his future capabilities may be. Further limitations, also are imposed by his own immediate ancestors. To be sure, these ancestors are legion and leave much inherent opportunity for diversity in development, but there is set, neverthelss, a definite limit beyond which the child can never go. To understand any child, then, it is necessary to recognize him first, as a young human animal with many characteristics which differ from those of the human adult; next, as a member of a race with many special mental and physical peculiarities, and finally, as a member of a family, with its particular aptitudes and limitations. This does not mean that all members of a family are identical or even strikingly similar because of this common family and racial inheritance. It does mean—and this fact has been established statistically beyond reasonable doubt—that dissimilar as children in the same family may be, still they are, on the whole, much more alike than are persons not in the same family.

Although there are these innate limitations, which no individual may disregard, there is another element of tremendous importance for each child, whose final power we are as yet in no position to measure more than very crudely. That factor is the environment of the child himself. At birth, each child has numerous impulses to action, but the interaction of these impulses and their resulting movements, with the actions of the persons toward whom they are directed, begins at once. The child has the impulse to make sucking movements or to cry as soon as born. But the establishment of the relationship between sucking and food, for example, depends not on the child, but on the person caring for the child. The sucking movement and the impulse to cry are both entirely useless unless responded to, and without the response of the mother represent mere wasteful expenditure of energy. Not so much later in the life of the child, actual formal training begins. Habits develop and conventions are enforced, so that even the child of five or six years,

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though still incapable of formulating any but simple judgments, dealing with concrete facts, presents a highly complex picture of innate limitations and capacities, hedged in by habitual tendencies and conventional adult taboos, not understood by the child, or always by the adult who enforces them. This, then, is the complicated organism to be dealt with by the home, the teacher, the doctor and the dentist, and each of these agents is interested in bringing about the best results for the child with the least waste of energy on his own and the child's part.

With this very general introduction, it becomes obvious that there can be no simple rule for dealing with children of all temperaments. It is also found in practice that the temperaments of the parents, in many instances, constitute a much more serious problem than do those of the children. But the dentist often has no opportunity to know or deal with the parent before he sees the child, hence much trouble may have been made for him long before the child appears in the office.

The psychology needed for handling both the parent and the child is made up far more of a mixture of sympathetic understanding and common sense than of a system of rules for the understanding of human nature. There are, of course, many different types of persons. What appeals to one may bitterly antagonize another, and there are some persons with whom all known methods seem to fail. The child psychologist, who devotes the bulk of his time and energy to understanding and helping childish misfits, does not always score a success. There are some children so suspicious and so self-centered, or so excessively timid and apprehensive that they can never really respond in a normal fashion to any unusual or trying situation.

When a dentist learns that a child is to be brought to him for the first time he may often direct the mother to his own advantage. As a general rule it is very unwise to prepare a child for an ordeal, because the period preceding the actual event may be rendered more terrifying than the ordeal itself. All of us, who go more or less regularly to dentists, are quite familiar with the apprehension with which we are filled from the time the appointment is first made until we finally arrive in the dentist's office. If, then, the mother makes the appointment for her child without telling the child anything about it, until the time arrives for the visit, there will be no reason for much of the difficulty experienced in treating children. Even the child psychologist, who has no occasion to cause physical pain, finds the child apprehensive and fearful because a well-meaning mother or teacher has "made things easier" by explaining the purpose of the psychologic test. The normal child is not fearful unless frightened, and fortunately for society there are many more normal than abnormal children. A few children, however, and many very young children, are of such excessive timidity that they are fearful of every new experience until that experience has proved itself to be harmless or pleasant. Many a little child on being brought to the psychologic clinic, clings tearfully to its mother, refuses to respond to questions and has to be beguiled by means of pictures and blocks and toys to a normal attitude. It is not wise to try to "rush" a child. It will shrink from aggressive friendliness just as surely as does the deer from shouts and quick movements. Most little children can be won by quiet, much more quickly than by bluster.

If the doctor will spend a few minutes talking to the mother, letting the child amuse itself with toys, placed for that purpose in the office, and only occasionally include the child in the conversation with an unobtrusive remark, the child will usually respond shortly by taking a normal attitude toward things about him. He can then be led from one subject to another until his self-confidence and trust in those about him have been fully established. It may occasionally be worth while to use the entire first appointment for winning the child's confidence and in securing his cooperation. For the child psychologist, this is at times absolutely necessary, because no mental examination is possible unless the child takes an active and interested part in the performance. This is probably less true for the dentist, since many things may be accomplished with a sullen or resistant child, and even a badly intimidated child may permit dental work, but in the end a policy which takes into consideration the child's reaction and attitude will greatly add to the peace of mind of the dentist, besides making the problem of dental work for the child a far less difficult one. If all children become accustomed to and interested in the value of prophylactic dental work, humanity will be spared much of the apprehension and actual pain which dental work often causes and the regular visits to the dentists, which everyone knows to be so important, will not be so easily "forgotten."

DISCUSSION

Dr. C. C. Mann, Seattle, Wash.—I feel it is extremely presumptuous for me to undertake the discussion of any paper on psychology. My acquaintance with the subject is very limited, being the result only of some little reading and some association with a few men in the work, and Dr. Bridgeman's paper was handed to me yesterday. I endeavored this morning and last evening to make a few notes, more with the idea of bringing to your minds the things in which we are particularly interested. Psychology is the scientific study of the mind and science asserts the mind is governed by certain uniform or regular laws, and that all science is the product of the mind. The development of the mind is dependent upon the nervous system, and upon impulses and impressions transmitted to it through the senses of feeling, smelling, hearing and sight. These impulses are transmitted by the various nervous ganglia, and by the sympathetic nervous system of the body. I have seen this likened to the central office of the associated press, with the wires coming in from the various parts of the world and all the news being assembled at one central point, and then disseminated through the press to the people. It has also been suggested by the famous psychologist, Halleck, that any child born with a perfectly normal brain, and that brain not having connection with the nervous system of the body —if such a child could live, it could not possibly develop mentally. The resultant effects then in the development of the brain are dependent upon these various impressions gained from the various senses, and that development is probably coupled with and tempered by inherited tendencies and environment. To my mind the environment is probably the greatest factor in the development of any child, and probably its effects on the ultimate results in the character of the development of the child plays the greatest part. The child, as I see it, absorbs, and assimilates, and as its development proceeds, it sorts out the impressions and ideas that it gains and gradually those are moulded into its character. Our problems with the child are not as great as might at first be thought. I think the handling of each child is a matter of personal equation, and the orthodontist should take into consideration each individual child as presented and endeavor to work with it on a fifty-fifty basis. The thing of most importance is the cooperation that the child gives us in our endeavors, and that cooperation can be brought about by forming a friendship with the child and making it understand that our attitude toward him is one of friendship. I believe our responsibility for any impressions the child may receive while under our care must be

recognized and their effect for good or evil on the child's mind must be carefully safeguarded. Most of the children under our care are in or approaching the adolescent period when they are most impressionable and the period when any ideas or impressions which may be given by the orthodontist may have a very decided effect one way or the other on the child. Seeing these little people so frequently as we do, we have wonderful opportunities for good in these matters. I think therefore that our attitude toward the child and our consideration of it should be always with the end in view of giving it the best impressions we can.

Dr. J. Camp Dean, Oakland.—I believe each child should be treated as an individual, and not as a "case." I have enjoyed Dr. Bridgeman's paper very much, and was interested in what Dr. Mann had to say. I remember several years ago when Dr. Mann was here he read a paper on this subject, every word of which meant a great deal to me in the treatment of my patients. It struck a sympathetic chord with my feeling toward these children we are serving. The constant association of any adult, with a child from one to three years as in the case of an orthodontist with his patient should mean a great deal in a child's life, and we are directly responsible for an influence on that life, and that influence should be for good. We should mean something to him. When he leaves our chair he should have something he can carry away that is entirely apart from the matter of teeth. I have very little difficulty with children breaking appointments. They are even willing to stand for the delays and wait patiently for their turn. They meet other children at the office, and the whole experience is pleasant to them, and they are glad to give up the time for the appointment. There is much that could be said on this important subject, and I feel our society would do well to have some phase of it presented in our program each year.

Dr. C. C. Mann, Seattle.—I think in many instances it is our own mental condition at the time that creates our greatest difficulty. In approaching any child I think if we can absolutely set ourselves aside and forget for the moment that we have anything to do except to form the acquaintance of this child we will have a great deal less difficulty in getting over these sympathetic waves the doctor refers to. I think probably psychology enters into our profession in a minimum degree. It is a question, as Dr. Bridgeman has said, of common sense. I think in handling any children and becoming acquainted with them, common sense enters into it a very great deal, and if you will meet them on their own plane you will not have much trouble in getting their confidence and friendship, or in keeping them. It is a great satisfaction in my experience to have some young man or young woman come into my office years after the completion of their work just to pay me a visit because they remember me and like me. So, I think we can all gain the confidence and friendship of our patients if we set ourselves aside and take those little people as we find them.

Dr. Bridgeman.—As to "sympathy" between individuals, all of us as human beings are endowed with mannerisms, and if we substitute for the idea of "vibrations" that of mannerisms, apparent sympathy or lack of it may be explained. A doctor may walk up to a certain child and pat the youngster on the back and the youngster will cringe and try to get away from him. The doctor should realize this and should know whether or not he can try that method on that particular child. Sometimes it works well, and again it will not work. The doctor may never overcome the first impression made on the child. Sometimes there is a fussy, jerky manner in dealing with the child. There are all sorts of peculiarities showing in our relations with other people. Those things may explain our difficulties in getting along with people. I think any normal person can get along with any other normal person if he wants to, each realizing that there are many traits to be overcome. The first problem in dealing with children psychologically is to watch the child for any peculiarities he may have, and at the same time watch our own peculiarities, in order to know whether they are going to antagonize the child. Much unnecessary friction is overcome simply by understanding the situation.

REPORT OF COMMITTEE ON ORTHODONTIC EDUCATION PACIFIC COAST SOCIETY OF ORTHODONTISTS SAN FRANCISCO, FEBRUARY 12, 1924

To the members of the Pacific Coast Society of Orthodontists:

In the matter of orthodontic instruction, about which there has been a considerable amount of discussion in the different Sections of the Society, this Committee has deemed it wise to bring the subject to the attention of the membership in as concise a manner as possible, since it is understood the consideration of the members at this meeting may lead to an expression of the Society as a whole.

The report is therefore made under three headings:

1. A digest of the papers of Drs. James D. McCoy, Dr. Robert Dunn, Dr. Guy S. Millberry (Dean of Dental Department of the University of California) and of Dr. P. T. Meaney.

The following synopses of the above papers are quoted from the Bulletin of the Pacific Coast Society of Orthodontists, December 1, 1923:

2. A statement of Principles to Govern in the matter of Orthodontic Education, and

3. The relation of the Northern Section of The Pacific Coast Society of Orthodontists to this report as a whole.

Dr. Jas. D. McCoy, Los Angeles.—"In instructing the undergraduate in orthodontia the teacher is confronted with difficulties not encountered by those who teach other branches of the dental curriculum, for few other branches are more recent in origin or have passed through an evolution marked by such rapid changes. Methods of practice have not reached the same degree of stability as that found in most of the other branches of dentistry.

"The determination of all details necessary to the realization of our hopes must come through careful study of the problem supplemented by patient experiment. One of the first and most difficult tasks is that of establishing in the mind of the student, as well as in the minds of many dental teachers, a correct conception of the real aims and problems with which orthodontia is concerned.

"The subject has not been an overly popular one with the undergraduate, due largely to its status in the dental curriculum. Certain subjects are considered major, while others are considered minor, according to the amount of time consumed in teaching. For operative dentistry 288 hours are allowed, for prosthetic dentistry 608 hours, while in the teaching of orthodontia 64 hours are allowed. Under present conditions the teacher of orthodontia is restricted to the extent of being able to give *only the most elemental principles,* and it is impossible to give the background necessary to fully prepare the student to receive those elemental facts. An instructor may in a short series of lectures condense facts which have required years of study and experience to gather, but he cannot convey the background which makes those facts rational and logical to him, and, as a result, much of their importance is lost.

"Until an adequate biological background can be incorporated in our teaching courses, orthodontia cannot be correctly taught. This will mean a vast amount of reorganization in the subject matter to be presented, as well as a great deal of special preparation on the part of those who are to do the teaching. For instance, we all recog-

nize the fact that orthodontia is concerned chiefly with problems of development. In studying these we know that two phases of biology are concerned: first, the intrinsic factors, or those which are inherent in growing cells; and, secondly, the extrinsic which constitute the influence of environment upon the inborn tendencies. How far have we gone in determining the relationship of these two factors?

"A decision should be made as to whether orthodontia is to be continued in the light of a minor subject, or whether it should be raised to the status of a major subject. Fundamentally, the requirements of teaching would be the same in either instance and would only mean a matter of amount and detail. If it remains a minor subject, fundamentals and principles should be taught; if a major subject, fundamentals and principles should be taught, plus the countless details which amplify them.

"All instructors seem to agree that the course for the undergraduate should include: first, a lecture course; second, a technic course; and, third, clinical instruction.

"A text should be employed which will make it possible for the student to follow up the material given in the lectures. The teacher should furnish the student with reference reading, and should quiz the class frequently.

"The technic course should include the taking of impressions and the making up of models for orthodontic purposes. Appliance construction covering fundamental principles should complete the technic course.

"Clinical instruction may be carried out by a corps of from three to five competent orthodontists as demonstrators, and each should place under treatment six, eight or ten cases, carefully selected as being typical and commonly occurring types of malocclusion. The senior class should be divided into an equal number of sections, and each section assigned to a demonstrator. These students would have the privilege of acting as observers. At various times and at various stages the students could be required to act as assistants to the demonstrator, doing such parts of the work as justified by their experience: such as the construction of casts, etc.

"At the end of the first semester, or at any other time which might be practical, the sections might be shifted from one operator to another, thereby being given the advantage of observing more than one operator and their varying technic. At various times the students might be collected by sections or as a whole, and the clinical phases of the work under progress discussed and synchronized by the head of the department.

"Postgraduate orthodontic instruction could be accomplished to the best advantage through the establishment of interneships in our dental schools. An interne in orthodontia should be required to spend at least one year, in which time he would not only receive the undergraduate instruction in orthodontia, but amplified instruction both in theory and technic and be allowed to assist demonstrators in orthodontia to the extent of his ability, and finally to conduct in the clinic a miniature orthodontic practice under the supervision of the department of orthodontia."

Dr. Robert Dunn, San Francisco.—"It has long been the opinion of a large number of orthodontists of wide experience that the present methods of teaching orthodontia are wholly inadequate and are resulting in the rapid degeneration of the most wonderful and important branch of dentistry. The high ideals embodied in the efforts of its earlier followers can truly be said to have provided the inspiration for the more recent and rapid advancement in other branches of dentistry. The decline of the science of orthodontia, which represents the ideal in preventive dentistry, is such that it is now being heralded as the great factor in the destruction of the dental apparatus and nervous system, and why? Because there has been no institution where the true principles of orthodontia have been adequately disseminated, resulting in the students deriving from the present teaching methods the false idea of quick and easy money with little or no conception of the fundamentals of orthodontia and less of high ideals. Those who are fortunate enough to have gained more than a smattering of orthodontic knowledge are still incapable of putting such knowledge to practical uses and must flounder about for years creating untold damage to innocent children, obtaining further enlightenment by empiricism.

"One of the most serious things we have to face is the degenerative tendency in

orthodontia for the last ten years. It is not more than twenty-five years old as a specialty; its development has been in the last quarter of a century. Is it not true that for the first ten years of that period of development it was in the direction of the unification of fundamental principles, in the acceptance more and more clearly of certain definite fundamentals, and in the direction of the standardization of procedure? From about that time on the tendency has been in the opposite direction, toward a scattering out in the principles of treatment. We have been for the last five years going backward as fast as we could toward the old state of chaos which existed when orthodontia was "regulating teeth" and it is because we have not studied carefully enough the fundamentals in the development of the human denture and the principles of orthodontic technic.

"The tendency in medicine and dentistry, with the development of those two great sciences, has been to increase the time required for the training of men for their practice, and many men in dentistry and in medicine, particularly in medicine, at the present time, have reached the conclusion with reference to the development of the special fields of practice, and in the applied fields of science have lengthened the required course in medicine and dentistry beyond reason, and that there is danger of eliminating the possibility of the best material entering the professions. As soon as you make the educational requirements in a profession so high that only those of independent means can reach it you may be excluding from that profession a large proportion of the men who, by mental capacity and characteristics, are really best fitted for it, and are excluded only by the artificial necessity of wealth.

"The great function of the dental profession is to serve the public, and whenever educational requirements are raised by a number of enthusiasts so as to destroy the usefulness of the profession, the question of education will be taken out of the hands of the few and regulated by the masses, which regulation will be detrimental to high ideals.

"In the dental curriculum, we have seen for years the increased demand for time in every department. We have got to reverse that direction and teach the fundamental principles which can then be further extended and applied. If you teach a dental student mechanical principles and finger skill, he can do anything with them afterwards. At the present time, they are making the dental student go into a technic laboratory and make a lot of different kinds of things and he does not get the finger skill and mechanical training out of all of them together. He can only make the things he has learned to make, and nothing else, when he comes out, because he has not been fundamentally trained. The change in training must be in the character of the fundamental training, and then the shortening of the courses in specialization, giving the fundamental principles upon which he can build, and from which he can begin to use the training he has already acquired.

"The nature of orthodontia and the treatment in vogue has made the subject one to which it has been difficult to give a suitable proportion of the time available in the curriculum of our schools without encroaching upon the time of other important subjects and studies. The course of dental education has been considerably lengthened, but has it added any advantage to orthodontic education?

"Unless it is possible to illustrate treatment by actual cases in practice, no amount of technic work or lectures will adequately impart all the instruction necessary to even give students the fundamentals of so important a work. Unless the student comes in actual contact with clinical cases of various classifications while under treatment from beginning to end, can he hope to attain sufficient knowledge and skill to be of any value in the immediate future to the public as an orthodontist. Of what use is theoretical knowledge to a student if he is not taught how to put such knowledge to practical uses?

"The intermittent course of instruction (Dr. Millberry's paper, *Bulletin*, September issue) can only result in the student gaining but a smattering of knowledge, and a little knowledge of orthodontia is in such case, a most dangerous thing.

"The apparent difficulty in determining the place of orthodontia in dental education is due to a confused idea of what constitutes the subject matter of the science and also to the fact that the difference between the aim and scope of the undergraduate school and

the postgraduate school has not until recently been recognized by those interested in the teaching of orthodontia.

"A knowledge of both morphology and physiology (once considered as more or less foreign to each other) is essential as a basis for treating the living organism, especially as regards studies of development.

"In undergraduate schools we find we need first that fundamental technic courses lose sight of some of their operative and prosthetic dentistry and be directed primarily to the training of men in mechanical principles and finger skill, which will give them that which they can apply to the construction of anything in the dental apparatus rather than the construction of twenty or thirty different kinds of crowns and bridges and plates. This is needed also in the teaching of orthodontia in the curriculum.

"A more thorough instruction of the undergraduate in the basic principles of his profession is not only the need of the general dentist, but will help more than all else to establish orthodontia in science. It will make possible the true postgraduate school which is a course of clinical experience and research.

"The so-called postgraduate schools of orthodontia have been so only in name, inasmuch as the greater part of the subject matter they have presented has been substantially undergraduate material.

"The graduate seeking a solution to his problems turns to the methods and systems which these postgraduate schools offer, when, in most instances, the inefficiency he feels is due to a lack of knowledge of the laws and principles of science fundamental in dentistry.

"It has been justly said that most of the so-called 'graduate courses' have presented nothing but undergraduate work. It is absolutely a just criticism, but why is it true? It is true because the men that came there as students could not do anything else. Just as soon as your dental colleges turn out men who are so grounded in the fundamental sciences and technic there will be a chance for some one to do something else, and not until then.

"It is only by teaching the fundamental principles of orthodontia in the undergraduate schools that postgraduate courses can be organized which will contribute substantially to the development of the science.

"To one who is to practice orthodontia must be given a special course of instruction, distinct from that now given in the schools of general dentistry.

"The greatest demand of the community in the realization of its orthodontic needs is some place where men can go and obtain an adequate training in the fundamental sciences—a firmer grounding in the fundamental principles upon which orthodontia is built—and an experience in technical performances and clinical execution under competent direction; where they can make their mistakes, but where they will be caught before the individual is damaged because of lack of supervision. Orthodontists have had to learn by experience, and by mistakes which have robbed them of their sleep, because of the damage they have unintentionally done to innocent children. It is a crime against the public to make everyone who goes out into practice repeat those personal injuries before he can learn; although some men never learn, they go on day after day, year after year, repeating the same damage, and they do not even know they have done so.

"The orthodontic course should be one calendar year. It should include for the first eight or nine months equal distribution of time between didactic and laboratory training and fundamental practical training, and the last four months should be devoted almost entirely to practical work in an orthodontic clinic under competent criticism and instruction.

"Dr. Millberry's idea of teaching fellows (Dr. Millberry's paper, *Bulletin*, September issue) may be fine for the fellow who receives the honored position, but how about the fellow who is receiving instruction from an untrained mind?

"After the year's course, I would recommend a man to go into the dental infirmary for public service and work, to broaden his experience (but not at first). It is the second step, the same as with medicine at the hospital.

"One year's experience in clinical work is not sufficient to acquire adequate knowl-

edge to treat an orthodontic case successfully from beginning to end, much less learning anything of diagnosis and prognosis.

"Orthodontia is so entirely different from any other branch of dentistry that the following quotation from 'Doing One Thing Well' will bear repeating here:

"'A fundamental rule of fine craftmanship is to concentrate on one special task. Each unrelated effort is time and energy wasted. Each fickle departure is a side road leading away from the main goal. Excellence is never won by vacillation. Its first condition is absolute constancy of endeavor.'"

Dr. Guy S. Millberry, Dean Dental Dept. of University of California, presented the following discussion:

"While in Chicago recently Dr. William Bebb informed me that the present index of all articles published in English on dental subjects indicates that the subject of dental education holds second place in the total number, being exceeded only by those published on pyorrhea.

"Judging by last year's production, the open season for papers on dental education includes the full calendar year; therefore, Dr. Dunn's paper would be timely on any occasion. Chaos seems to prevail in the discussion of this broad subject, yet the orthodontists have attacked the problem with real sincerity and earnestness, as the essayist's review and interpretation of the recently expressed opinions of well-known orthodontic teachers shows. These opinions, together with the experience of all the leaders in this field, are deserving of careful consideration.

"That we are drifting in orthodontia may be more apparent than real, for great universities cannot suddenly evolve and put into effect a new and enlarged plan of teaching. The problem involves the creation of a workable plan; its presentation to the governing bodies of the University, including the faculty, the senate, and the board of regents; the material facilities for carrying it on, including teachers, lecture rooms and laboratories, and finance, and the coordination with all other related departments in the University.

"In most large universities the changes are evolutionary rather than revolutionary and perhaps are not very spectacular because of the slow growth. Dr. Suggett has indicated the changes that have occurred in the last decade showing a more rapid progress in the past two years than at any previous time.

"If the practice of orthodontia has degenerated as Dr. Dunn states, it may be attributed to two factors: one the neglect on the part of Universities to proceed rapidly toward a recognition of the newer educational needs of this science, which is in part controlled by the fixed and exacting licensing requirements in most states (and these have little or no relation to modern orthodontia); and two, by the short courses of study, mainly technical in character, which some schools of orthodontia are offering.

"The faculty of our school has given consideration to, and proposed a revolutionary plan in dental education which can perhaps best be explained graphically.

"Our concept of the proposed plan follows:

"Dental education in the future should not consist of a hard and fast curriculum divided into four academic years, with or without pre-dental collegiate preparation. It should consist of a number of major courses with minor courses and prerequisites, some of which may be offered in other departments of colleges in the University.

"These major courses, supported by other essential requirements that are directly related thereto, would lead toward that specialty in dental practice for which the student desires to qualify, and an appropriate certificate or degree should follow. Let it be understood that such a plan includes general scholastic training in science, and medical and dental subjects, which every practitioner in dentistry should understand.

"The graph is intended to present a plan whereby various kinds of dental education can be provided for the prospective student, beginning in the high schools and continuing through the colleges and universities, including the requirements for higher degrees.

"The various terminal facilities which this plan offers provide the opportunity for students to discontinue study in these institutions and engage in some form of activity in dental practice for which they have been suitably trained. Laws regulating the prac-

tice of dentistry might have to be amended to meet such conditions, but this is not an insurmountable obstacle. The best licensing procedure might be a single act governing the practice of dentistry in all of its various forms rather than a fixed standard based on two kinds of practice which are quite unrelated and inapplicable to others, such as now prevails.

"Referring to the graph, the base to work toward or start from is graduation from a standard high school. Below this base line provision is made for training dental assistants in the high schools so that on graduation they are prepared to engage in this vocation in a private office or continue in advanced studies toward the other terminals.

"The high school instruction includes such technical work as girls are expected to do in a dental office or laboratory after being trained by the dentist to meet his requirements. This instruction is to be given in the junior year in high school by a dental teacher. During the senior year in high school, provision is made for training the pupil in standard procedure in office practice, including record keeping, handling patients, care of office, and equipment, etc. This instruction may be given in private dental offices under guidance of a teacher or co-ordinator, and is quite generally followed in other vocational fields where teaching on the job is necessary.

"Above the base line we begin our collegiate instruction, vocational or professional. Junior colleges or teachers' colleges may some day offer instruction in some of this work, notably to dental hygenists or public school hygienists, to meet local needs. A two-year period of instruction for dental hygienists or dental technicians would probably provide ample training for those who wished to engage in these vocations under the direction of the dental profession and yet who were financially or scholastically unable to go farther.

"A four-year period of instruction for dentists comparable to our present plan leading to the degree of Bachelor of Science in the College of Dentistry, entitling the holder, after being licensed, to engage in the general practice of dentistry, would be the next step.

"It might be advisable or necessary to inhibit or prohibit the practice of surgery, general anesthesia, and orthodontia, in such instances until further preparation, to be determined by some form of examination, indicated the qualification to carry on.

"Graduates with the B. S. degree may return to the University and, after completing certain graduate work in any field of endeavor, receive a Master's degree and, should further licensing procedure be necessary, thus qualify as one specially prepared for a particular form of practice.

"Thus orthodontia may be offered as a major graduate course in the College of Dentistry. It could be supplemented by minor courses in advanced zoology, physics, biochemistry, and ancillary subjects such as psychology, social science studies, etc.

"The highest degree, the doctorate, should be more truly representative of higher scholastic attainment than any of the others and should conform in a general way to other degree requirements in the University, such as Ph.D., D.Sc., J.D., M.D.

"At least two years of collegiate preparation should be required in basic science leading to a Junior certificate. From then on, the student should select such majors with appropriate minors and prerequisites as will lead him to the desired goal. Orthodontia, oral surgery, prosthodontia, teaching and administration present the established goals in dentistry today, though others may develop.

"Each of these requires some general training common to all, yet each demands special study of certain problems not required by the others. The selection can be made with the help of advisors. Integrating students of this type in various courses in several departments or colleges is much easier because the scholastic level is more definite than in dental colleges where the entire course of study is prescribed in order to complete the professional requirements in four years.

"The plan is being discussed in the University of California, and may find therein an opportunity for expression, as stated by Dr. Suggett, the theory has not been tried, but it is analogous to the normal procedure followed in universities for hundreds of years and seems feasible.

"When the university is ready to adopt a plan of graduate instruction in dentistry,

in keeping with its own ideals such as are expressed in Dr. Dunn's paper and generally concurred in by leading orthodontic teachers in the United States, we will be ready to offer the type of instruction you desire, and we hope that may be realized in the very near future."

Dr. P. T. Meaney: The dentists in general are particularly lacking in interest and the realization of just what a student can accomplish in an allotted time. It is not possible for a student with only a very elementary foundation to get much of an understanding of orthodontia in a year's time. Were the student a graduate of dentistry it might be possible to accomplish sufficient to enable him to satisfactorily start the practice of orthodontia. My idea and effort is to acquaint the student with orthodontia as related to general dentistry.

While the Papers presented on the subject come from all three sections of the parent society, the fact that the present committee is from the membership of the northern section alone would seem to have the effect of making the report more "suggestive" than representative of the opinion of the whole membership of our society. Indeed the *Statement of Principles* under division 2 of the report, has received at least an expression of approval of practically the entire membership of the northern section. This statement has had no reading so far as the committee is aware, before other sections.

In the matter of the so-called "Intermittent Course" of instruction, as outlined by Dean Millberry, the practically unanimous expression of members present at the recent special meeting of the section, was in favor of a *trial* of this course. However, it is believed there is some dissent from this opinion even in the northern section.

All of which is presented in the hope that the whole subject may be clarified through discussion, and we trust through the action of the society, to the end that orthodontic education may at least more nearly approximate its right status in the near future than heretofore.

It may be added, by way of a personal word of the members of this committee, that much credit is due our Secretary, Dr. C. O. Engstrom, for his valuable suggestions and assistance. Further, the committee does not presume to have reached any lofty conclusions because of any ideal advantages of education as viewed by present-day standards. Rather it may be said, we deplore the inadequacy of the facilities hitherto offered for securing the well-rounded education in this specialty that the subject merits. We therefore submit that it is with a realization of our own shortcomings that we venture the hope that with improved teaching methods the pathway of both the orthodonist and that of his patient may be made more sure.

REPORT ON UNDERGRADUATE AND GRADUATE INSTRUCTION

For the information of those contemplating the practice of Orthodontia, for the guidance of those actually engaged in teaching the subject in dental schools and for the enlightenment of those who have not followed its ever-broadening scope during the past few years, The Pacific Coast Society of Orthodontists presents in the following statements their unanimously adopted opinions regarding the requirements of modern orthodontic instruction and training. These statements present frank and honest conviction and are not

intended as criticism but rather as constructive principles in the further advancement of orthodontia.

Detail explanation has been avoided insofar as possible, lest confusion result, or lest the matter be so constricted as to prohibit variation within just limits and according to circumstantial requirements.

The popular conception of orthodontia may be said to be centered on the procedure of correction of malposed teeth by simple mechanics and incomplete means, and as such is too limited, and as a result of such treatment injustice is heaped upon many innocent children. In this connection attention is directed to advertisements and papers belittling orthodontia and purposely displaying seeming simplicity of procedure, more particularly in regard to orthodontic appliances, all for certain selfish gains or because of ignorance. A true appreciation of orthodontia may be had only through education in its science. The uninformed professional man, like the layman, looks upon a malposed tooth as a slightly abnormal deviation, the so-called adjustment of which requires but little mental effort and skill.

As one pursues the study and practice of orthodontia he realizes more and more that so-called simple conditions are frequently complex: that time, effort and expense may be wasted because of consideration being directed to the tooth or teeth only and to the simple mechanical means for so-called correction, while no account is taken of the many factors responsible for the malocclusion.

A sufficient knowledge of orthodontia to enable one to justly cope with malocclusion cannot be acquired in a few weeks or months. It takes years of patient study, observation and experience in treating malocclusion to adequately perceive the laws underlying these malformations and the factors which control the positions, functions and growth of the teeth. There can be no limit to the acquisition of orthodontic knowledge; the more one gets the greater is his power for service and the more successful he is in benefiting those who seek his help. This acquisition of knowledge is ever progressive. Much depends on study and observation. Each year of practice broadens one's mind and make more exact his judgment.

Before undertaking orthodontic practice the initiate should have a fair understanding of what that practice really means; that it means constant study, observation and experience. The means used in treating malocclusion are based on knowledge of natural laws, and his success will be in proportion to the degree of his comprehension of this knowledge.

While the orthodontist must attend to his own training he must also educate the public. The cooperation of patients and public depends to no small extent on their concept and appreciation of orthodontia. At present the most cultured, not necessarily those of the best financial standing, give the best cooperation. In this way the real field for orthodontic service is limited. These limits should ever be extended.

The present orthodontic course in dental colleges should be so changed that fundamentals may be properly inculcated in the mind of the student. The student should receive as much fundamental knowledge of orthodontia

as possible, in his dental course, from competent teachers, qualified by many years of study and experience, and not from those in their first few years of practice. Such fundamental study of orthodontia should not be confused with orthodontic treatment. Orthodontic treatment is graduate study, which should follow the completion of the dental course. It is based on a wider knowledge than can be inculcated in the ordinary dental course. Knowledge of such studies as are fundamental in dentistry are absolutely necessary in the study of orthodontia.

Orthodontia for the undergraduate should be taught by a series of lectures which might include principles of occlusion, development, growth, heredity, etc. These lectures should be amplified by constant reference throughout the dental course. Like any other subject in the dental curriculum orthodontia should not be disconnected from, but should be properly correlated with other subjects.

In the graduate study of orthodontia the fundamental subjects of general dentistry should be reviewed and those subjects of particular importance in the practice of orthodontia should be studied. Orthodontic technic should be most comprehensive, and should be taught with both physical and biologic consideration. Clinical work should begin as soon as possible after commencing the course, and should extend throughout at least one or two years. The student should attend cases in all stages of development and treatment.

The third stage in the education of the orthodontist is what may be termed that of *study, observation* and *experience,* in which personal responsibility is brought into play. Herein lie the greatest possibilities for the acquisition of knowledge and skill. While every year will present real problems and the scope of knowledge will be ever broadening, the orthodontist will have the cooperation of his fellow-orthodontists if he himself will do by others as others have done by him.

B. Frank Gray,
Leland E. Carter,
Committee.

DISCUSSION

Dr. Leland E. Carter, San Francisco.—In the discussion on this subject it should be considered from three different standpoints. The problem resolves itself into three phases: 1. The Undergraduate. What sort of instruction shall he have? 2. The Graduate Dentist, the young fellow just out of college, and 3. The man who has been in practice for several years and who probably is not used to studying and who would have difficulty in keeping up with any course such as the young fellow just out of college might follow with comparative ease.

The first part of the problem has probably been solved; at least it seems to be progressing satisfactorily. The problem of graduate work is now being tried out, or will be tried out in the University of California here, and I think the Northwestern University has started a course. Dr. A. LeRoy Johnson is also in charge of such a course at the University of Michigan. We can discuss this problem for a long time, but we can only offer suggestions to those who have teaching experience. No matter what kind of a course is started, we know the proof of the pudding will be in its eating, and it will take a little time to work this problem out. We have to build from the bottom up: we cannot put the

roof on first, and so I think in the discussion of this particular problem if we attack it in a logical way and consider it from the standpoint of the three phases suggested, we may be able to offer some helpful suggestions to those responsible for conducting the course.

Dr. Guy S. Millberry, Dean Dental Department, University of California.—I suppose, like the Irishman said of the "scrap" he came across in the street, it is not the orthodontist's fight alone; anybody can get in. In the presentation of a rambling discussion of the matter I can only refer again to the question that education seems to be as important in the orthodontic field as in any other field in dentistry, and it interests me to see that tendency still prevails. I think as a result of the present effort you probably will be discussing orthodontic education next year and the year after, and the year after that, but I hope you will eventually be discussing results rather than anticipations.

The report your Committee has presented here is replete with an abundance of suggested material, and if we can have the opportunity of referring to that material later on it will be helpful to us in formulating our plans.

If I may discuss Dr. Suggett's paper, in the plan presented to the University and which is to be discussed in the Graduate Council this afternoon, I hope to impress on them that that is the one favorable outlook for graduate work in orthodontia, and it carries with it the very special things referred to in your report. It also carries ample fundamental instruction for the undergraduate dentist. We have to reduce our courses of instruction to the irreducible minimum for the man coming into practice on the four year plan. The effort to crowd twenty-five or thirty years of knowledge gained by the teacher into the four-year course has been the natural tendency. The plate-denture teacher wants to make the senior student as capable in anatomical occlusion as he is after twenty-five or thirty years' experience. The same is true of the gold inlay teacher and the crown and bridge teacher and in fact the orthodontist would like to do the same thing. The result is the pressure is so great the student cannot cope with the problem and he seeks every possible opportunity to escape from the burden. He keeps up to the scheme where he can, and otherwise falls down. The only outlook seemingly, is to establish an irreducible minimum for the general practice of dentistry, which will be the four-year level, and afford the opportunity thereafter for graduate instruction.

I would like to differentiate between graduate and postgraduate instruction as defined by the American Medical Association in discussing the question. Graduate instruction involves an academic year of attendance and a definite course of study. The postgraduate course varies usually from two to eight weeks, and is designed for the man who goes to brush up on some special field of work. But we propose to offer real graduate instruction. The idea of the intermittent plan was to provide postgraduate instruction for the man who wants to familiarize himself with orthodontia. Such a man would not be entitled to a degree, at least not on the completion of the intermittent course or postgraduate work.

I take it you are not concerned with discussing the easiest and quickest way a man can get into the field of orthodontia. I assume you are concerned with the best type of preparation that can be given to the man and to that end we should set up a course in clinical work in orthodontia, advanced work in technic and advanced work in the history of orthodontia. A historical review of the great men and their accomplishments in orthodontia during the past hundred years or thereabout would be inspiring and helpful. So if you are interested in the best kind of orthodontia we can set up a course to meet that need. If the student wants training in philosophy, psychology and English, he can choose those studies. If he has not the prerequisites he can spend a little time in getting ready for them. In the biological field, if he lacks zoology, let him take summer school work in this line. The ideal that will be set up is not going to be an easy and smooth way to get into the field of orthodontia, with the M.S. degree. He must meet the requirements. The calendar year mentioned in the report, is not customarily utilized in the regular course. With the Intersession and Summer Session and eight months regular instruction, the calendar year is practically used up. If a man enters in August and does not complete the

required work by May, he can go on during the Intersession and summer session and qualify for a degree in September, or if necessary may continue until December.

The question of the Teaching Fellow was raised as offering a temporary arrangement. The Teaching Fellow is a candidate for an advanced degree, but he cannot complete the requirements ordinarily as quickly as the man who can go along regularly and who has plenty of money to carry him through. The Teaching Fellow has to work his way. He may spend six or seven years while the other man gets through in two or three.

Dr. McCoy spoke of the relation of the instruction in orthodontia to the other university courses. I do not suppose we have quite realized what the carrying of instruction into the departments of biology, physics and chemistry will do. Those men may become tremendously interested in orthodontia by virtue of the fact we are asking them to give this instruction.

One thing of interest is the professional ideals which you have adopted as your point of view. In January we invited Mr. Robert Sibley to discuss the question "What is the University doing for the State of California." He surprised us all by discussing men, and pointed out men all over the world, graduates of the University who are doing things, graduates in letters and science, engineering and law. Your accomplishments represent what orthodontia is doing for any state, or for this state. Therefore they ought to represent what the University should work for. Your concept of the practice of orthodontia should be our pattern to follow, and we should all strive to improve the design, the handiwork, and the final product.

The question of announcing such a course of instruction has been of some interest to us. We feel in the first instance that the announcement of the instruction should be incorporated with our regular course for the benefit of the undergraduate who may wish to continue. It may be better to announce it by leaflet or otherwise as a graduate course in orthodontia. We also are concerned somewhat with the tuition fee. We feel that the man who wants this special training perhaps should pay a little higher tuition fee than the average student because he will require more personal attention, and we have suggested that possibly two hundred dollars might be fair with very small, if any, special fees. The largest sum any student pays in the college of dentistry today is about $212 a year. The seniors pay about $185 per year. Two years ago it required $396, and last year $437 per student to educate them. Therefore we cannot afford to sacrifice our educational effort on students who are irresponsible and who neglect their opportunities. While the instruction will be an added burden to the staff, the graduate students should be paying a fee that will make them appreciate the value of special training.

The graph which I presented I judge many of you have seen. The presentation of this graph to Dean Lipman of the Graduate School impressed him as a simple and easily understood exposition of the plan.

We cannot hope to go on without mistakes. We do hope they may not be serious and we trust we may have your continued interest. We find the greatest interest in our orthodontic staff in this subject. Eight men are in charge of the work.

It is a pleasure to meet with you and to talk on this subject and I hope there may be many further opportunities of doing so.

Dr. Robert Dunn, San Francisco.—I have not much to say in addition to what has been read out of my paper by Dr. Gray, with the possible exception that at our last meeting (which was devoted entirely to the subject) those present will remember I took exception to this so-called intermittent course. I did, however, later vote endorsing it. Since that time the more thought I have given to the subject the more I believe it is a mistake on the part of the University to undertake such a procedure. No one would gain anything but a mere smattering and I am of the opinion that it would interfere with the graduate course of instruction. If a man who is following the general practice of dentistry wants to take up orthodontia, unless he is willing to sacrifice a year to learn something about it he had better let it alone. Our aim is to raise the standard in the teaching of orthodontia in that the student will know something after he has taken the course,

and not have to spend years after graduation learning by empiricism. So that is my stand. I am opposed to the intermittent instruction. The thought was given I believe, that such a method would have a tendency to do away with our present short-course instructions. I do not believe it will have any such effect. I am rather afraid the University might get into the postgraduate work and not get out of it.

I should like to make a suggestion if I may, as to what is going to be taught. Orthodontia is a very young profession: there is still a great deal to learn. Where are we going to get all this knowledge we expect to impart to these students? Shall it be from the textbooks? We have comparatively few textbooks and the majority of them had better be in the wastebasket. Where will you get your knowledge? Gentlemen, there is but one way to get it and that is to have somebody interested enough to go throughout the whole profession in the United States and gather up the various ideas or experiences of men who have been practicing orthodontia for many years. I repeat you cannot get it out of the textbooks. It is not there. Much that is printed is what somebody else has repeated and is not based upon facts. This is natural because of the short time orthodontia has been practiced as a specialty, and we cannot expect anything different, but if we are now going to teach orthodontia as we should, we must get this knowledge in some other way.

Dr. W. J. Bell, Los Angeles.—We discussed this matter in our Southern Section at length, but it seems to me there is one thing lacking in the instruction to the student, particularly to those who are going to take up general practice. Dr. Millberry speaks of the great pressure on the student. Naturally the student will escape wherever he can. I know that to be true. But the general practitioner perhaps does not receive the proper instruction, namely to diagnose a case, or to be able to advise when the orthodontic treatment is needed. How frequently have patients come to our offices and we learn that some dentist has advised them to wait until all their permanent teeth are erupted, until thirteen or fourteen years of age. We know that is wrong. The damage has been done and it is much harder to repair than it would have been to prevent. It is a bit like a physician who might say wait until you are sick and I will cure you. The other physician says you are likely to be sick. I will prevent your illness. There would be no hesitancy as to which physician we would choose. Another feature: Too much instruction in orthodontia to the man who intends to follow general practice, has a tendency to influence him to take up orthodontia as a side line. About the only result is poor service to the patient and discredit to orthodontia. What he should have is a general knowledge of orthodontia sufficient to enable him to give intelligent advice relative to the needs of his patients. The subject was discussed as to how much time should be devoted to instruction. I do not see how it can be put into a general course and the student not intending to follow general practice can take the graduate work and pay the special fee for it. We know the orthodontic schools are not entirely satisfactory. The certificates they give may have some psychological effect. It takes years and years of experience to successfully practice orthodontia. It is not merely a matter of pushing teeth here and there, so great stress should be laid on the instruction given the general practitioner. There is too much tendency to take the work up as a side line by the general practitioner and the results are not complimentary to us, as orthodontists. The work is not held in as high esteem as it should be. It is a wonderful field requiring years of study and application for its mastery and as yet we are only in the beginning.

Dr. Leland E. Carter, San Francisco.—I should like to put a motion here that will be acted upon a little later. In the meantime I want to ask Dr. Millberry a few questions to see if we cannot get this matter focused. I move that a committee of not less than six be appointed by the President of this Society, that committee to be divided among those who have teaching experience and those without teaching experience but who have had long practical experience in orthodontia, and that this committee shall work through a solution of this problem, cooperating with the University of California, or any other

educational institution that wishes to undertake the solution of the problem,—to the end that we may get the best possible results out of this discussion of orthodontic education.

It seems in one way we may attack this problem as we would the matter of prevention. It has been suggested that the general practitioner is lacking in things orthodontic to the extent that he is unable to advise his little patients as to when an orthodontist should be consulted. One way we can get around that is by commencing right now to teach our undergraduates at least a full appreciation of what orthodontic interference means and in the future we will have eliminated this problem we are up against now. As to the matter of educating the undergraduate. Something has been started toward the solution of that particular problem, but we still have the man who is out in practice for four or five years. What shall we do with him? We can talk until doomsday, but that will not give the man enough money or place him in a position to give up his general practice and spend the year in gaining instruction in orthodontia in the University of California, or in any other educational institution. He may be a desirable man and might make a wonderful addition to our ranks. He should have some entree to the practice of orthodontia, if he so desires. I was much interested in this suggested intermittent course, and I believe it has a tremendous advantage over any short course that can be given in two or three months' time. Taking it from an educational standpoint and basing it on educational principles, it appealed to me and I will ask Dr. Millberry to explain it here. A man goes to one of the six weeks' or two months' schools and has a lot of knowledge compressed into him that does not take root, and you cannot tell me that he cannot gain that same amount of knowledge over a period of time affording ample opportunity for its digestion, thus allowing him to get better results. I would like to have that explained to me and learn if it is not so.

Dr. Guy S. Millberry, Dean Dental Department.—If I might amplify what I have said before, I am willing to present these points for your consideration. Our thought in connection with the intermittent course was that if a man of five or ten years' experience in general practice, wanted to go into the field of orthodontia, his only way now is the short course, unless he has money enough to spend a year in College, which would be far preferable, but if he has a practice and wishes to hold it together until he can gradually step over into the field of orthodontia exclusively this method might be practicable. If he comes once a week on Monday morning, and works under the guidance of the Staff for a day and a half he would have practically a year's guidance. He would be devoting his major study to orthodontic work, although he would be there but a day and a half, Monday all day, and Tuesday morning. Under such a plan the Staff could watch him as he goes on, and if he shows no possibilities he will drop out in one or two months and we will hear nothing from him. On the other hand, such men might prove valuable acquisitions to the orthodontic group under this plan of instruction.

We hear from men all the time who want to specialize in surgery or orthodontia in a week's time; they want us to take them any time they are ready. Last week we had an inquiry from a man who was blind in one eye, who had given up practice and who wanted to go into minor surgery and extraction, each requiring the best eyesight. He thought we could give him a course. He was told that perhaps he should not practice dentistry any longer.

It seems to us if the applicant for orthodontic qualifications is in longer contact with the subject he may become more thoroughly acquainted with the requirements of this special practice, and this method would seem to afford such an opportunity. Like Dr. Dunn, I am wholly in sympathy with the graduate course and we would only offer the postgraduate course in order to try it out. We would not announce such a course. I rather think it would be but a brief time until that type of orthodontist would no longer be encouraged to take such work. We really discourage all those men from coming to the Institution because we are too busy with the regular work. By way of illustration, and possibly Dr. McCoy has heard Dean Ford tell the story, a boy from the East Side of New York came out and understanding that the requirements of our State Board were exacting

as to the Black System of Cavity Preparation, called upon Dean Ford and ask if he could not be coached so that he could meet the Board examinations. Dr. Ford said, "Have you any idea of the Black system or how long it takes to acquire a knowledge of it?" He stated he had not; he had heard it was used out here in California. "All I want is something snappy," he said. We do not want anything "snappy" in orthodontia.

Dr. J. Camp Dean, Oakland.—This course is not to be included in your announcement for 1924-25?

Dr. Millberry.—No, because it is not a university course in any sense of the word. It might offer a certain opportunity as stated. It has not been approved by the Institution, or by the Orthodontic Department.

Dr. James D. McCoy.—I had not intended to discuss this paper because of the fact that my ideas have been recorded and are practically in accord with those of Drs. Suggett and Millberry in regard to graduate instruction as well as undergraduate instruction. However, the discussion has gone so far that I cannot refrain from saying a few words, first of all with regard to Dr. Carter's thought of having a committee appointed. I will tell you frankly, after eighteen years in teaching undergraduates, I do not believe a committee such as he suggests can function with any degree of help, as there are not two schools in the United States that carry out their teaching programs in exactly the same way. When graduate instruction is given in orthodontia, and with the inauguration of this course in the University of California, there will be three courses in operation in the United States, and all three will be directed along slightly divergent lines. Time only will tell the character of orthodontists which these courses will turn out. All three schools are absolutely sincere we know, although they may all differ in their methods. Possibly all three will be successful. On the other hand, the chances are at the end of the first year certain modifications will be made, and in another year further modifications will be made, until eventually the teaching of this specialty will be brought to somewhat the same degree of standardization that prevails in the teaching of general dentistry.

Just a word in regard to the intermittent course. Personally I am opposed to it. I usually take the opposite from Dr. Dunn in order to start an argument, but this time I believe he is right, although I can understand Dr. Millberry's conception of the matter. Dr. Millberry is altruistic in his ideas. He is seeking, and always has, to aid the Profession of Dentistry, and I think he often tries harder to aid the public than the profession, if that is possible. He looks to the humanitarian side of the thing. I believe what we want to do is to really and thoroughly prepare men for the practice of orthodontia. I believe if we try to do it by the intermittent method that in the long run the damage we can do in creating "near-beer" orthodontists rather than the good old-fashioned 5 to 8 per cent kind will far offset the good that might accrue to individuals in certain instances. You will find today certain orthodontists possessing outstanding merit. They have not achieved their successes purely because of their training, but in many instances because of their character. If a man of the right character is hungering for knowledge, he can secure it without taking the intermittent course. Some of the best orthodontists today are those who have not taken courses of any kind. A man can get it from the literature, from association with orthodontists and in other ways, and the educational institutions will not be taking the responsibility they would have to take if they give the Intermittent course.

I think eventually we will institute a graduate course in our school, although I have not been willing so far to do so. I think Dr. Millberry and his associates are very courageous to undertake the work. I have had trouble enough in trying to provide adequate instruction for the undergraduate and I know our course has many imperfections and I hope we can eliminate them as quickly as posible. But I think the intermittent course would not afford any worthwhile relief in our instance. I think the short courses in orthodontia, while they have helped a good many men we know who have taken this or that course of six weeks, whether in the middle west, far east or here in San Francisco, I

think those courses have created more misnomers in the practice of orthodontia in the long run than they have good men. Unquestioningly some of the men taking those courses have, because of personal persistence and character, achieved success and have become useful to humanity.

Dr. J. Camp Dean, Oakland.—As I understand it, the report of this committee has been arrived at after a year's work of the various sections of our society, and it is comprised in what Dr. Gray read in the latter part of his paper, and that this report is the consensus of opinion as unanimously adopted by the Pacific Coast Society of Orthodontists.

Dr. Carter's motion (See page 19 of these proceedings) seconded by Dr. Gray. The motion was lost.

Dr. Robert Dunn.—I am surprised and feel encouraged that my friend, Dr. James McCoy, has agreed with me once. I really feel that the intermittent course will detract from the graduate course and do not see where there is to be any advantages in it other than for those who have the idea that all orthodontists are getting rich, and therefore it is a fine specialty to get into. They are not interested in learning how to do the work farther than just enough to gather in the shekels. These men should be discouraged. If they cannot afford to take the graduate course they are not entitled to practice orthodontia. The intermittent course would be a course of discouragement to a man who proposes to take the graduate course. Therefore, I move that this society go on record as discouraging any intermittent course being adopted in any dental school.

Dr. Leland E. Carter.—I am not going to argue all day in favor of this intermittent course. Probably nobody would go if it were put in at the University of California. Dr. Dunn and I have argued this in our Northern Section meetings. I got so far with him that he agreed that the course would be all right if it were limited to those who had been in the dental practice for at least five years. I do not think we should go on record against this course at the present time, although I have no axe to grind. It makes no difference to me. Drs. McCoy and Dunn both seem to be against me and perhaps I might be wrong. But I am afraid they are cold-blooded about this fellow who has been out in the practice a little while. I am for allowing this man to have a year's association with the students and instructors at some educational institution. The majority of us are products of the short-term course. We did not learn very much at the old short-term school. But we came back full of enthusiasm and theory, but not much practical knowledge. I had to burn the midnight oil and worrying over my cases put gray hair in my head. Many others have had the same experience and that is why I argue for some men who wish a better opportunity to study orthodontia. When these young men in college have been instructed in orthodontics for awhile they are going to have a full appreciation of the fact that they are not able to go out and cope with men who have long been in practice. I think it would be better to have a man take this intermittent instruction than to have him bust into the profession by main force.

Dr. Robert Dunn: Why favor the young man out in practice at the expense of the student?

Dr. Carter: We are not favoring him. Don't you believe a man spending one and a half days with the instructors at some college may go back to his practice and be benefited by what he has learned? He can bring his problems to them and get advice from them and he will receive a lot of instruction and clerical experience he can never get in two months. When I took a short course I started at 8 o'clock in the morning and did not get through until eight o'clock at night then I had to study until twelve or one in order to keep up with the work. I know absolutely so far as I am personally concerned that I would have gotten 100 per cent more out of that particular course if it had been intermittent and continued for a year.

Dr. Dunn: Do you think a man in general practice can give time and thought enough to the work and get from this intermittent course sufficient knowledge to fit him to go out and practice orthodontia?

Dr. Carter: If he is going to specialize in orthodontia he can cut down his practice and earn enough money in three or four days a week to keep himself going.

Dr. Dunn: He won't do it.

Dr. Carter: Maybe he will, and I want to give him the opportunity to do it. We are preparing to say to the man of several years' practice, you give up your practice and take a graduate course of one year, or "break into" orthodontia without instruction, or go and take a six weeks course. There is no law preventing any dentist going into orthodontia and starting a practice with no orthodontic education whatsoever.

Dr. Dunn: That is true of any branch of dentistry.

Dr. Carter: But if we give them the opportunity to receive better instruction we are filling a long-felt want there.

Dr. Dunn: The intermittent course is not practicable.

Dr. Carter: There has been nothing advanced yet that will show me it is not better than the intensive training of six weeks or two months.

Dr. Dunn: I won't deny that. I do not think either one is proper.

Dr. Carter: Which is the better?

Dr. Dunn: I do not think we will be helped by this intermittent course and believe the teaching in the graduate course of one year's time will do more good than all others.

Dr. Carter: I think that the ideal method but I would provide for the man who cannot give up all this time to take a year's course.

Dr. C. C. Mann, Seattle: How about the chap in California or Washington who is not in touch with the University of California?

Dr. Carter: That is perhaps to his disadvantage—his living in Washington.

Dr. Mann: Then why should you be selfish and institute a postgraduate course of one year?

Dr. Carter: I am not against the graduate course of one year.

Dr. Mann: Would it not be better for the University to bend all its efforts toward the graduate course, and eliminate the intermittent course?

Dr. Carter: I do not propose to have the postgraduate interfere with the graduate work.

Dr. Mann: Dr. James McCoy referred to the "near-beer" orthodontist. That man is not always the product of these short courses. He is the man who decides that no course is necessary, as a rule. There are some of the "near-beer" orthodontists in the other courses but as a rule they have had some instruction. But if we could have a good, "honest-to-God" graduate course of instruction I think these short courses wold soon be eliminated.

Dr. Carter: I am not arguing against the graduate course but the chances are I might as well try to fill the ocean by throwing sand into it with a spoon as to convince this organization that the intermittent course of one year is practical. If it is the opinion of the men here that it should not be, I am willing to abide by their decision. I simply wanted this question thoroughly thrashed out before it was voted upon.

Dr. Millberry: Would it not be well to get an expression to see how the Society stands on this matter?

Dr. Bell: You cannot eliminate the man who is going to practice orthodontia without special training. The only way you can do it at any rate is by persuasion—not by law, the present law. I think we are getting nowhere. There is a question whether or not beneficial results will be produced if this intermittent course is adopted. It is my opinion

that the only way is by a special course of a year and if the Universities are not willing to put in that course, with special instructors, we are merely wasting time.

A man asked the clerk in a supply house to select some orthodontic bands for him. What can you expect from such an embryo orthodontist as that? If it is a matter of dollars and cents to the man whether he gets his course, he had better continue the practice of general dentistry until he is financially able to take a special course. This matter of trying to cram them full, in our Dental Colleges except under favorable conditions, I think will result in a mere waste of time.

The vote taken resulted in twelve opposing the intermittent course and three favoring it.

Afternoon (Monday) Session:

Dr. Robert Dunn moved the report of the Committee on Orthodontic Education be adopted, with the elimination of any portion alluding to the intermittent course. Seconded by Dr. James D. McCoy. Carried unanimously.

THE CAUSES AND EFFECTS OF MOUTH BREATHING*

By Edward D. D. Davis, F.R.C.S., L.D.S.

Surgeon, Nose, Throat and Ear Department, Charing Cross Hospital

THE effects of mouth breathing develop so slowly and so insidiously that this cause of poor physique, in spite of its frequent occurrence, does not appear to have received the attention it deserves. Nevertheless mouth breathing has contributed very largely to the formation of the round shoulders, flat chests, deformed jaws with bad teeth, and is accompanied by nasal obstruction with its attendant catarrh which contributes to the defective physique so commonly seen in many rejected army recruits or recruits of low category. If baby shows were extended to adults it is certain that no inveterate mouth breather would be judged worthy of a prize for physical development and perfect health or beauty. The presence of signs of mouth breathing will also help to decide the necessity for operation in doubtful cases of nasal septum deformity or for the removal of tonsils and adenoids.

The cause of persistent mouth breathing is not by any means confined to the obvious one of nasal obstruction. Nasal obstruction in young subjects is rarely complete but is more commonly intermittent and partial. For example, an adenoid growth in a child does not produce obstruction during the day when in the erect posture, and it is only at night during sleep that stenosis, rather than complete obstruction, occurs. Similarly, deformity and deviation of the nasal septum produces a partial and sometimes intermittent obstruction according to the condition of the mucosa of the inferior turbinated bones. In a warm, moist, or vitiated atmosphere the inferior turbinals become relaxed and engorged to diminish the amount of air passing through the nose; in a cold, brisk atmosphere the turbinals contract and nasal respiration becomes free and complete. In the mouth breather, this function of the nose is in abeyance and a vicious circle is established in which the turbinals become per-

*Read before the British Society for the Study of Orthodontics.

manently engorged and lose their power of contraction and eventually become hypertrophied producing chronic nasal obstruction and an unhealthy state of the nasal mucosa. This variation of the nasal mucosa often makes nasal obstruction intermittent, and such a patient may have a free nose at the time of examination, and the cause of the mouth breathing is not then evident, but the history of the patient will reveal symptoms of nasal obstruction particularly at night.

Habit is the commonest cause of mouth breathing and is difficult to cure even when the nasal obstruction has been eliminated. Confirmed mouth breathers are frequently seen who have perfectly free and patent noses in which there has never been any nasal obstruction; for example, the imbecile, with his open mouth but, strange to say, well developed jaws and broad free nose. In others, though the cause of the nasal obstruction has been removed by operation some years previously, they still remain mouth breathers. Again, there are some cases of mouth breathing in which there is a short upper lip and an open bite in which there is no nasal obstruction, but in repose the mouth remains open and can only be kept closed by a distinct effort on the part of the patient. Mouth breathing is thus sometimes due to an open bite and will persist until the open bite has been corrected.

Occasionally infants are seen who cannot suckle without difficulty and without frequent pauses to breathe through the open mouth, and if there is no other reason for this apparent nasal obstruction the pharyngeal tonsil, or so-called adenoids, has been scraped. For my own part, I am not quite sure that this is the real cause of such inability to suckle, and it is feasible to suppose that these infants may have the same difficulty in carrying out this coordination of muscular action that older children have in blowing the nose. Moreover if the adenoid tissue is hypertrophied it is probably a temporary enlargement such as is known to occur during the first dentition. An infant who is allowed to lie and sleep on its back and is not placed in the correct position on its side, develops the habit of mouth breathing because, when relaxed, the lower jaw tends to drop by its own weight. It is probable that early and persistent nasal obstruction results in a want of development of the width of the floor of the nose, the antra, and maxilla, hence the difficult case with the pinched nose, narrow nose with sucking in of the *alae nasi* and poorly developed maxilla. It may be of value to know what is the normal width of the nasal fossa at certain ages compared with that of the maxilla. Such measurements can be taken by callipers, and in cases in which expansion of the maxilla is being carried out any increase in the width of the nose can be estimated. The development of the nose and jaws is closely associated and probably interdependent, but it is not so certain as to which is the primary cause of the irregularity in spite of the fact that clinical evidence frequently condemns the nose. Looking at a skull which has particularly well developed normal jaws and nose the orthodontist would say "what a free, broad nose; no wonder he has good jaws," but the laryngologist would reverse it and remark "what a good well developed maxilla; no wonder he has a good nose."

Deformities and irregularity of the shape of the jaws and position of the

teeth are due to a combination of causes of which nasal obstruction is undoubtedly a contributary and active factor and certainly increases any existing deformity. It is generally accepted that the muscular action of the tongue, cheeks and lips have a direct influence on the molding of the jaws and this action is disturbed in mouth breathers; and also it is admitted that orthodontic treatment of deformities associated with nasal obstruction fails, owing to relapse, unless nasal breathing is established.

The shape and size of the jaws and position of the teeth is often hereditary and racial. For this reason, there are several types of normal jaws which are in conformity with the contour of the head and face, and typical of the race or nationality of the subject. The inferior protrusion on the undershot jaw, though increased by a defective occlusion, the absence of lateral incisors, and the diastema between the central incisors, are inherited. The long narrow jaw of the Gold Coast negro and the square, rounded jaw of the European are racial. There have been slight differences of opinion as to what is the type of normal jaws, but for practical purposes and from my own observations, I would define those jaws as normal in which the arches are round and symmetrical with the teeth in line and almost an edge to edge bite, with slight overlapping of the upper incisors. I have seen many patients who are undoubted mouth breathers but have no deformities of the jaws, and I have records of several cases of neglected adenoids with septum deformity and nasal obstruction where the jaws are well developed and normal. Conversely, deformities have been present in patients who have perfectly free noses, are not mouth breathers, and have no flattening of the chest; and in others who have had tonsils and adenoids efficiently removed before the age of six. I have the records of a patient with atrophic rhinitis which commenced in childhood and who has superior protrusion and an open bite similar to that seen in cases of nasal obstruction. J. G. Turner reports that children who have worn tracheotomy tubes for prolonged periods do not show any abnormality of the jaw. It is also remarkable that in the few recorded cases of congenital occlusion of the posterior nares, which is nearly always unilateral, there were none of the deformities usually associated with mouth breathing and nasal obstruction. From the above facts it can be claimed that nasal obstruction does not produce a simple and direct mechanical action on the mouth, but I think that all will admit that it plays a contributary part.

The type of deformity associated with mouth breathing becomes definite about the age of six, but the want of development can be recognized even at an earlier age by the absence of the spacing of the temporary teeth with little room for the eruption of the permanent teeth and this is followed when the first molars are erupted by a postnormal occlusion leading to the absence of edge to edge attrition of the incisors. Finally the deformity of the jaws seen at a later age is the narrow maxilla with lateral compression and the resulting high palate and superior protrusion forming what is known as the V-shaped jaw or gothic arch. It may be accompanied by the open bite as the result of the compression lowering the alveolus of the upper molar

and bicuspid region, or possibly by the protrusion of the tongue between the teeth. The mandible sometimes shows depression of the molars exaggerated by the elevation of the incisors of the mandible which may occlude with the palate instead of the maxillary teeth.

Open bite not only prevents efficient mastication, but the want of use of the incisor teeth increases the marginal gingivitis already present as the result of mouth breathing and hence probably arises early pyorrhea alveolaris. In emphasis I would repeat that this type of patient will always be a mouth breather until the open bite is corrected.

My clinical experience coincides with M. H. Cryer, who found that the high palate is not always associated with a congenital nasal septum deviation and, conversely, a congenital septum deviation is frequently seen in patients in which the palate is flat and well rounded. The maxilla, as you know, forms the greater part of the nose and particularly the floor of the nose which is most concerned with respiration, and I am sure that deformity and cramping of the maxilla produces a narrow, obstructed nose and it is here that the orthodontist can help the rhinologist by devoloping the maxilla, and one looks forward to greater cooperation and team work between the orthodontist and rhinologist in this respect.

The mouth breather of long duration possesses the thin, narrow, poorly developed nose with the sucking in of the *alae nasi,* and it is in this type of case that the results are so well shown by the early morning dry mouth and headache, the want of tone and clearness of speech with its disadvantage to the singer, also the susceptibility to catarrhal and middle ear deafness, the congestion of the fauces and pharynx, sore throats, laryngitis, and the obvious detrimental effects on the chest. This type of patient is susceptible to catarrhal attacks and suffers from frequent and prolonged colds with the inevitable loss of time and work due to sickness. The effect on the development of the chest is most important. The round shoulders, the flat, shallow chest and depressed infraclavicular regions and the winging of the scapulæ are characteristic. This deformity is increased in rickets, but it can be distinguished from the pigeon breast, the Harrison's sulci below the mammæ accentuated by the eversion of the costal margins and the funnel-shaped chest which are due to the pull of the diaphragm on the soft ribs, and even these rickety deformities are considered to be increased by mouth breathing. This deformity of the chest, with its shallow breathing and want of expansion with frequent catarrhal attacks, is undoubtedly a predisposing cause to pulmonary tuberculosis and bronchitis, and the effect on the general health is obvious, but the mechanical reasons for such deformity of the chest produced by mouth breathing are not so easy to explain, and it is to be noted that in cases of laryngeal obstruction due to a congenital web of the larynx, congenital stridor, papillomata, etc., there is no deformity of the chest.

It is difficult to estimate how much mouth breathing and nasal obstruction affect the mental development, but the open mouth with flat chest and thrusting forward of the face with the occasional hardness of hearing always gives the impression of a want of intelligence and alertness.

The treatment of mouth breathing is carried out on the following lines:—

(1) Nasal obstruction, if present, should be corrected as early in life as possible. Nasal obstruction should not only be detected by the tests such as holding a feather or flake of cotton wool in front of the nostrils, but by the presence of mouth breathing during exercises.

(2) Breathing exercises to promote nasal breathing and to expand the chest.

(3) Early correction of open bite and superior protrusion, with appliances to correct the habit of mouth breathing and snoring. (I know of no better or more successful appliance than the mouth screen devised by Mr. Warwick James.)

(4) The late case with the thin, narrow nose with *ala* collapse is a most difficult type to improve or cure, and a forlorn attempt to increase the width of the nasal cavity by a dental appliance which expands the maxilla and opens the intermaxillary suture has been attempted.

In conclusion, the modern orthodontist if given an early opportunity can mold and train the growth of the jaws like a gardener trains a tree. He is also in a position to detect mouth breathers at an early age and, in cooperation with the rhinologist and drill sergeant, he is able to render a great service by improving the physique of the nation.

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The Relation of Nasal Obstruction to Dental Disease by J. G. Turner. Transactions Section of Stomatology, 17th International Congress of Medicine.

The Supervision of the Health of Children between Infancy and School Age, by W. Warwick James. 17th International Congress of Medicine.

DISCUSSION

The President said the Society was very much indebted to Mr. Davis for his paper which was of great interest and contained much food for thought. There must be many members present who held views upon mouth breathing, which was almost the basis of orthodontics in many respects. He should like to ask the author what he regarded as the earliest age at which mouth breathing occurred. It had been said that adenoids occurred in a prenatal condition, as had been found in hospital practice, and it would be interesting to know at what age the greater number of patients usually developed obstruction. The author had said that habit was the commonest cause; if that was so he placed the breathing through the mouth before the obstruction of the nose. In discussions which had taken place between those practising dentistry and rhinologists the matter was argued by one party in one way and by the other in the reverse way. He thought the majority of people up to recent times would have said that nasal obstruction was the primary factor. He himself thought that mouth breathing might precede the obstruction of the nose. The term mouth breathing was one which was used rather indefinitely. If the lips were apart, although the mouth was not actually used for the passage of air, the patient would still be called a mouth breather because it presented the deformities which occurred by the action of the cheeks and the absence of the action of the tongue. Such patients might be almost called patients with lips apart. There were cases which showed almost complete nasal obstruction and the mouth must necessarily be used for respiration, but the majority of cases, he believed,

would be classed as partial obstruction of the nose. There were cases where the lips were kept apart where the nose was quite free, and he should like to know in what proportion those cases could be grouped.

Mr. W. J. May referred to enlarged glands that sometimes occurred in the neck of children when there was no apparent cause and no septic teeth, and as far as could be seen the throat was free from obstruction and the tonsils normal, but the children still had enlarged glands, and he should like to ask the author's opinion as to the exact significance of those glands, and also whether he had any statistics to show what proportion of the glands were tubercular. He had read that of tonsils removed, some three or four per cent were found to be tubercular. How many glands, even the smaller ones, were found to be tubercular?

Mr. A. T. Pitts said the subject was one of tremendous interest and perhaps of more importance than anything else to the orthodontist. He was glad the author had laid emphasis on the fact that the relationship between mouth breathing and deformities of the jaw was not such a simple one as was often suggested. Very often dentists made the relationship much too simple, assuming that as the floor of the nose was the roof of the mouth, the two were connected and varied directly. It always seemed to him that there must be some other additional factors because at different times nearly all the deformities of the jaws were said to be due to mouth breathing. Cases of postnormal occlusion or excessive overbite were said to be due to mouth breathing but the author suggested there might be some other factors and it seemed to him also that there might be certain other factors which, cooperating with the mouth breathing would show why, in some cases of mouth breathing, there was marked deformity and in others not. Mr. A. J. Wright, of Bristol, recently reported a case of two sisters with bony occlusion of the posterior choanæ and they had had mouth breathing from birth. He said that the jaws were quite well formed and went on to suggest that possibly partial obstruction might be a greater factor than complete obstruction. Where there was mouth breathing due to enlarged tonsils and adenoids there might be pathologic factors coming in, whereas in cases of occlusion of the choanæ, the element of infection might be absent. Lawson Dick, in his most interesting book on rickets, attributed a very large number of defects of the jaws to that condition. He thought that rickets, in conjunction with nasal obstruction, which might lead up to adenoid vegetations, had a profound influence in modifying the shape of the jaws. Those changes in the jaws which Sir Arthur Keith had suggested were due to an evolutionary factor, were, according to Dick, much more likely to be due to rickets which he regarded as the cause behind the nasal obstruction accounting for deformities of the jaws. With regard to the point made by the author as to the effect of mouth breathing showing itself by absence of spacing of the incisor teeth, it was interesting to know that Wood Jones in his book on "Arboreal Man," referred to that subject and considered that the absence of spacing, which was very often met with, might be an evolutionary factor due to the progressive diminution of the jaws owing to their lack of functional vigor as compared with more primitive types. With regard to inheritance of the conditions associated with mouth breathing, he knew of a case of a father and two sons who both had superior protrusion with postnormal occlusion, with narrow noses. Was that due to an environmental condition, or was there in such a case a true inheritance, and if there was a true inheritance was there any possibility of trying to effect any improvement by orthodontic treatment? With regard to the age at which the cases came in, he had had one child of about three years of age, with extremely marked superior protrusion and postnormal occlusion, and he was inclined to think of mouth breathing as a cause. That was the earliest case he had seen. Mouth breathing under some conditions was physiological. In violent exercise the mouth was kept open. Especially was that the case in running, and dogs like the greyhound breathed through their mouths at that time. It would not seem that mouth breathing always brought with it the long trail of disabilities attributed to it. Some time ago there was an article in the *Lancet* on the condition of the mouth in airmen and the statement was made that some of the airmen were mouth breathers and did not appear to suffer in any way from ill effects. Had they been examined by a dentist some results of mouth breathing might have been detected. With reference to the definite effects of gingivitis, there was one point which Mr. James and himself brought up in a paper some time ago, namely, denudation as a factor in

eruption and it was thought then that undoubtedly in mouth breathers the denudation of the incisor teeth might be incomplete and that therefore that might be a predisposing factor to pyorrhea later on. With regard to treatment he was glad that the author had spoken of the oral screen, because although that was familiar to most dentists it did not seem familiar to medical men. Most of the rhinologists he had spoken to had never heard of it; yet he was convinced that it should be a most important ancillary treatment of the conditions and rhinologists would find it very useful. The very earliest case he had had was a little child of three years of age who had mouth breathing, but not nasal obstruction, because the adenoids had been removed. The child used to get a discharge of blood from one nostril at night. With considerable difficulty he took impressions and made a mouth screen of aluminum, and after some trouble he got it into place and told the mother what to do. A fortnight after the child was brought to him in the outpatient department peacefully sleeping with the instrument in place and he was told that the discharge of blood had stopped at night. He thought that where it was considered that the instrument should be used in connection with a mouth breathing habit, before doing so the child should be examined by a rhinologist to see the condition of the nasal mucosa and to judge of the effect, if any, induced by a cessation of mouth breathing. In cases where mouth breathing existed it would be extremely interesting to be able to estimate the condition and then see later what changes, if any, were induced by a return to nasal respiration at night. Neurologists were very fond of quoting a high palate as a stigma of degeneracy. He had often been puzzled by that and he had tried to track it down to its source, without any success. Neurologists did not seem to be able to say how it came about. There were many cases of high palate, and he found it very difficult to imagine a high palate could be considered as a sign of degeneracy. It seemed to him that the best explanation might be that in such cases a high palate might be associated with adenoids, when the children were deaf and cut off from the stimulation which children with normal hearing had, and therefore became stupid and that became stereotyped into definite mental defect, and for that reason the palate was put down as being one of the stigmata. He did not think there was any causal relationship. It seemed to him that if the neurologist would consult the dentist better information might be obtained on that point.

The President, referring to the question of habit, said at one time he collected a large number of cases where thumb sucking and habits of that kind were common in very early life, and he had frequently thought that that might be a factor in the production of mouth breathing. There must be some factor of that sort if mouth breathing be the primary factor and not nasal obstruction. It might be merely habit. He had also wondered whether children who had too many bed clothes adopted the habit. A child with a high temperature would frequently open its mouth to breathe and there seemed to be some effort at respiration. In his own children he noticed that if they became hot at night, and had too many bed clothes, they turned on to their backs and lay with the mouth open. The loss of heat which occurred in animals might apply to human beings; they might like to get additional moisture through the mouth instead of up the nose.

Mr. W. Rushton said that years ago orthodontists used to think they knew something about the cause of mouth breathing, but they were getting more and more puzzled and the subject became more enigmatical and complex as time went on. Formerly it was said: "If you close your mouth you will find the tongue absolutely fills the oral cavity; therefore you have the muscles on the outside more or less exercising their influence, counteracted by the muscle of the tongue on the inside, and if these two are in equilibrium you have a properly molded arch." It seemed to him a most rational thing to believe, but the author and others say that there are many cases in which we do not get contracted arches supposed to belong to the typical mouth breather. When the mouth is kept open the tongue naturally drops to the floor of the mouth. The muscle of the tongue therefore exercises no countervailing force in the upper jaw, but it does in the lower jaw. In one of the photographs that had been shown there was a very narrow vaulted maxilla and a very finely developed mandible, which seems to bear out the theory.

The theory was so absolutely reasonable, that one was rather disinclined to throw it aside without finding something else to take its place and he should like to ask the author whether he had an equally satisfactory theory to bring forward. Mr. Pitts had mentioned the case of a child of three in which he saw very marked superior protrusion, and the President had mentioned that there were many cases of thumb sucking. It seemed to him that many cases of thumb sucking simulated mouth breathing, but thumb sucking and mouth breathing were mutually antagonistic because it was not possible to suck the thumb and breath through the mouth at the same time, or at least with any pleasure. With regard to the age at which adenoids came, he had seen a young mother that very morning, who told him that her newly-born baby had to be operated on for adenoids because the doctor said the child was born with adenoid obstruction and that the sooner the operation was performed the better. He was wondering if that were true. He wondered if Nature so far forgot herself as to start a human being in the wrong way like that. One thing quite certain was that, as so-called civilization advanced, the shape of the face and the shape of the jaws were very profoundly modified. Once upon a time he had great interest in going through the pictures of many of the old royal houses, particularly the Hapsburgs and the Medici. Both those families started all right with well-developed heads and jaws, but as centuries passed by, the type of head and face entirely changed and some of the later representatives of those houses, instead of having fine broad, well-developed features, had narrow, long, typical adenoid mouth-breathing faces. Typical instances could be seen in portraits of our King Charles II and King James II who were descended from the house of Medici, and he should say that, in that house and in the house of Hapsburg after a time, the predisposition to that condition became hereditary. That could be seen in the portrait of the present King of Spain, whose children he believed had been under treatment for that same sort of thing. The author considered that habit was the commonest cause of mouth breathing, and the question arose, what was habit? He would define it as something which tended to proceed on the line of most comfort or least resistance. Nature, he thought, intended man to breathe through the nose and that was a natural habit. If for any reason there was any discomfort in that habit, another habit was taken on because that was the line of least resistance. He thought Mr. Davis must find some other reason. In conclusion, he thought it an excellent thing when a gentleman who had taken the L.D.S. had gone into another branch so closely allied with dentistry. It was in the mutual interchange of thoughts on such subjects that something would be finally reached in the way of an increase of knowledge.

Mr. Pitts said he had excluded thumb sucking in the case he mentioned.

Mr. J. W. Mayer said the author had mentioned that he had used the anti-mouth-breathing apparatus, and he himself had also used it, but did not seem to be very fortunate. Most of the people he had asked to wear it had had so much difficulty that they were inclined to give it up without taking any further trouble. One doctor had used it and had become weary with it. He himself had used the apparatus which was demonstrated by the President, a soft rubber apparatus, and he should like to know if the author found that he obtained universal satisfaction from the apparatus.

The President said at times there was undoubtedly great difficulty in inducing people to wear it, and it depended a great deal on the age of the patient. If a person had been breathing through the mouth for a great number of years, it was a habit exceedingly difficult to break. It was only by persistence that the result could be achieved, and he did not think it could be achieved in all cases, but in a number of cases extraordinary results were obtained.

Mr. George Thompson asked whether there was any connection between deformities and breast feeding or bottle feeding. He thought the breast-fed child brought up in a healthy environment might suck its thumbs or do anything else, and the bones would not be influenced in any way.

Mr. H. Clarke asked whether if a patient about the age of thirteen or fourteen came with nasal passages that had been well cleared, and without evidence of mouth breathing,

but with an open bite and a very narrow upper arch and a fair lower arch, with considerable spaces between the teeth, and by orthodontic treatment the appearance of the deformity could be corrected, the patient would benefit to any marked extent; was there going to be very considerable improvement in the health, or was there very little to be hoped for with regard to general physical condition?

Mr. Packham said several wearers had told him that their night's rest would be disturbed without the use of the mouth valve, and that seemed curious. One patient of his asserted that he could cure an on-coming cold by wearing the mouth valve for two or three nights. With regard to classification of mouth breathers, some mouth breathers were really mouth breathers, and others, although they had the lips apart, were not mouth breathers at all. The question was a very important one, and he agreed with the author that the correction of the open bite was one of the most important factors in correcting the habit of mouth breathing. If it was impossible for the lips to be closed, as was very often the case with children where the lower lip was inside the upper incisors, he took it that until either the lower jaw was advanced or the upper incisors retracted, the two lips could not meet and the mouth breathing would not be stopped.

Mr. S. Wilson Charles said he agreed with Mr. Rushton that thumb sucking and mouth breathing never went together. He had a baby at the present time who sucked her thumb, and as soon as she went to sleep, took the thumb out of the mouth. He had tested her every night for the last week and she breathed through the nose. When she started a cold she breathed through the mouth. Another child invariably breathed through her nose when she was sucking her thumb, and at other times breathed through her mouth; as soon as she took her thumb out she breathed through her mouth.

Mr. Rushton said that with regard to a child whose lower lip was always behind the upper teeth the same rule applied; children could not breathe through the mouth and keep their lips in that position.

Mr. W. Kelsey Fry said it would be interesting to know the easiest way to get rid of the open bite, whether it could be done by exercising the lips. He had had a little experience in plastic work and had found that by exercise the lips could be stretched enormously, and he was wondering whether a little exercise would be of value in orthodontics.

The President said he had quite a large experience of thumb sucking and other forms of sucking, and believed the deformity that was produced defeated the very point Mr. Rushton had made that the tongue and the lips occupied the space. There was an actual space created between the incisors. It did not occur in all thumb suckers, but if they apparently bit with a repeated action of the mandible the deformity was greater. If the jaws lay passively in position it apparently did not produce a deformity. He had found definite thumb sucking with no deformity and he had come to the conclusion that it was a muscular action which produced the deformity and the space created between the incisors permitted air to enter both through the mouth and the nose and in due course the mouth breathing habit could be created. If a child closed its lips where deformity had been produced, the lower lips came under the incisors and acted as a cushion, increasing the deformity, and mouth breathing was probable.

Mr. Rushton asked whether sufficient air could be got between the teeth to satisfy the lungs.

The President did not think it was necessarily so, but some air passed through the mouth and some through the nose, and it was only necessary to establish nasal catarrh for mouth breathing to occur.

Mr. Pitts asked whether it was possible to breathe through the nose and mouth simultaneously.

The President thought it was certainly possible.

Mr. Davis replying to the discussion, said he had not the same confidence that he had when he started. It was a very difficult subject and there had been many questions difficult to answer. The President had spoken about the earliest age in which mouth breathing occurred. Mouth breathers were brought with a diagnosis of adenoids, the

mother bringing the child along to have its adenoids removed. Just before the war he collected notes of about 1,061 tonsil and adenoid cases that he had done, and he looked through them to see the number of children from whom he had removed adenoids under the age of two, and there were only four or five. The majority of children who had tonsils and adenoids removed were considerably over two years of age. Therefore he did not think that mouth breathing in children was really very common, yet Mr. Jones of Birmingham said he had removed adenoids in a large number of cases of infants who were unable to be suckled. Such cases were not seen by him. He had several colleagues at work at the Children's Hospital, and they said that they removed adenoids but that they did not know that it made very much difference. Even Lack would not admit that an adenoid growth was congenital. A child was born of course with a pharyngeal tonsil, which became hypertrophied, but he said children were not born with enlarged tonsils. It was difficult to say whether the mouth breathing started first or nasal obstruction, but he was rather inclined to think that nasal obstruction would bring on the other. With regard to Mr. W. J. May's remarks about glands in the neck, when one was unable to find a cause for enlarged glands in the neck, if there was no focus of sepsis one looked on them as tubercular. In the smaller glands it was difficult to prove they were tubercular because they were not removed. In some cases in which they had been removed they had been demonstrated to be tubercular. There was a difficulty in finding the tubercle bacillus actually in the tonsil. One might get a group of cases in which the glands in the angle of the jaw were tuberculous; it commenced in the tonsil and spread to the tonsillar gland and so on, and it had been proved at the children's hospitals that when those glands occurred in ninety per cent, the infection arose through the tonsil. It had been actually found that milk from cows had been a source of infection. Mitchell examined a number of cases at the Children's Hospital in Edinburgh, and found that ninety per cent of that particular type of case arose from milk. Chronic sepsis would account for a certain amount of enlargement of the glands in the neck. Mr. Pitt's remarks had been very useful. With regard to high palate, Mr. J. G. Turner had examined a large number of asylum children and found that they had particularly well-developed jaws, and there were very few high palates, and he pooh-poohed the idea that high palates had anything to do with inbecility. He himself had been to that asylum and gone through the cases, and found very few children with high palates and he believed that idea must be given up. It was a thing that was copied from textbook to textbook. He thought mouth breathing had a good deal to do with temperature in connection with exercise. If the temperature of a man was taken just after he had played football it would be found to be 100° or more, and he believed the man took air through the mouth as a method of reducing the temperature, just as a dog did. He quite agreed with Mr. Rushton about the tongue. It seemed a most reasonable thing because the tongue was a very powerful muscle which had a very distinct molding effect upon the jaws. He did not know any better argument than the position of the tongue in the mouth for the molding of the jaws, but if one went into the question in connection with deformities one got into a tangle at once. Thumb sucking was a difficult problem and the President's explanation of why in some cases there was a deformity arising from the sucking of the thumb and in others not was interesting. He thought it depended on muscular action. He was discussing the question of deformity and thumb sucking, after seeing a number of cases Mr. Colyer showed, with another nose and throat surgeon who lived in South Africa. That surgeon had beautiful jaws and he put his teeth together and said that he sucked his thumb for many years, and his family, numbering five, were all thumb suckers and had perfectly good jaws. With regard to the mouth screen, it did need a little perseverance. He had an aluminum mouth screen made for himself, but he found it rather hard and made him salivate and he eventually took it out of his mouth. He was going to try the rubber screen which was very much more comfortable and patients, especially the older ones, would wear it. It was difficult to train children at first, but if done gradually and with kindness it would be found that they would wear it. It could be put in the mouth for five or six minutes at a time, and that time increased until the patient fell asleep with the screen in position, and once that happened the difficulty was over. It

was the best appliance he knew of to correct mouth breathing. Skull caps and chin straps and various other appliances, if they became loose, did not do their work properly; they were pulled off or worked off during the night. He did not know of any better method to cure the habit of mouth breathing than the mouth screen. With regard to breast feeding, he could not answer the question satisfactorily, except to say that he looked upon a breast-fed child as a perfectly healthy and normal child. An artificially fed child became a little delicate in health. Also one looked upon a healthy child as more easy to control. Apart from that he did not know whether there was very much difference. With regard to patients of fourteen or fifteen years of age being amenable to treatment, he thought patients could be treated up to about twenty-one or twenty-five until they were fully developed, but it was very much better to get them as early as possible. It was hopeless to try to expand the maxilla in a patient of twenty-one. Once a patient could be given a free nose and convinced that he could breathe through his nose quite freely, he was very persevering in wearing the mouth screen. That was probably the crux of the whole thing—to make them feel they had a perfectly free and good nose which they could use.

DEPARTMENT OF
ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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MEDICAL ASPECT OF ORAL DIAGNOSIS*

By W. W. Duke, M.D., Kansas City, Mo.

IT is the aim of dentists to treat patients for the purpose of saving as many teeth as possible for mechanical and cosmetic purposes. It is the aim of physicians to treat patients primarily from the standpoint of general health. These two laudable objects of our endeavor now collide and it is often necessary, in the best interest of the patient, to make a sacrifice in one direction or the other. This, of course, is very apparent to all.

Frequently it is no easy matter to choose a plan of action which puts sacrifice at a minimum. Physicians are in a position to recognize the harmful effects of oral sepsis so far as health is concerned, and are inclined to emphasize this factor, whereas dentists, acquainted as they are with ill effects of bad mechanics in the mouth due to the loss of teeth are inclined to emphasize this factor and disregard medical opinion which they often consider of doubtful value.

Differences of opinion of this sort are not subject to criticism. In the present day, however, after a decade of intensive study of this subject both by dentists and physicians, it is possible in the great majority of cases to choose the course which is safest, so that between dentists and physicians who place the factor of safety first differences of opinion can be reduced almost to a minimum.

The phase of the subject for which the physician can be held responsible is the finding of oral sepsis as well as sepsis in other localities in every patient whom he examines medically. The responsibility for details in oral diagnosis should rest entirely in the hands of dentists. It is hardly fair to hold physicians responsible for this, limited as they are in equipment for making oral examinations. The responsibility can again be placed upon physicians, however, for matters concerning a patient's health and its relationship to oral treatment—that is, concerning the urgency of complete, as compared with incomplete or palliative work.

*Read before the Missouri State Dental Association at Excelsior Springs, May 28, 1924.

For a period of time now exceeding ten years, the writer has subjected every medical case to oral examination and has endeavored in every case to have extracted every tooth which was believed to be doing harm. Radical work was advised in the case of severe illness and in the case of illnesses such as syphilis, arthritis, and diabetes in which oral sepsis can do more than ordinary damage. Incomplete and palliative procedures were frequently approved of in patients with minor illness and in healthy people in the earlier years of this work and often to my sorrow. In the later years a more and more complete clean up of oral infections was urged in healthy as well as in sick individuals. It is upon the apparent influence of these procedures on general health that this paper is based.

In patients having the same degree of resistance one tooth may be very much more injurious to the health than other teeth, even though the same infecting microorganisms may lie at the roots of each. The most injurious tooth from a purely anatomical point of view is an acutely abscessed tooth undrained. Acute pus formation in a dense structure, such as bone, is necessarily a major illness and can result in anything from fifty per cent disability to death.

Next in order, I believe, lie the loose teeth which are the site of abscesses or granulomas, especially loose teeth which carry bridges and so located as to be used a great deal in the act of mastication. Local as well as general rest is of prime importance in the treatment of patients with any infection. Conversely functional activity augments the ill effect of any infected tissue. In the case of loose teeth which are used in chewing, rest is at a minimum. The fact is that bacterial products are being pumped into circulation constantly from such a source. Some of the most brilliant therapeutic results which I have observed after the extraction of teeth (except those which were acutely abscessed) have followed the removal of loose teeth.

Chronic granulomas at the roots of teeth which are firmly imbedded in bone and especially at the roots of teeth which are thrown out of service by malocclusion are apparently less harmful than those which are loose and which are used a great deal.

As a general rule, dead teeth, which show little or no areas of rarefaction at the apex and which are firmly imbedded in bone are less harmful than the ones previously alluded to. Teeth answering this description (dead teeth), however, can be chronically abscessed in spite of negative Roentgen findings or can become acutely or chronically abscessed at any time and give rise to disease before either the patient or dentist is aware that trouble is brewing. One such tooth in a patient under my own observation became acutely abscessed and resulted in ulcerative endocarditis which terminated fatally.

Residual infected areas because of their protection from the direct trauma caused by chewing would seem theoretically less harmful than abscesses at the roots of useful teeth. However, even these can be the causative factors of serious ill health.

Unfortunate for all of us important teeth from a dental standpoint are usually busy teeth. For this reason protection of health often necessitates most of all the removal of the busiest and most important teeth which a patient possesses.

Oral sepsis can do harm in a number of different ways.

1. By direct extension giving rise to infected antra, infected tonsils or to ulcerative stomatitis known as Vincent's angina.

2. By metastatic infection through the medium of the blood stream or lymph channels it can give rise to a great variety of diseases in distant structures.

3. Through reactions known as allergy it can disturb the function and give rise to disease in tissues which have already been infected by microorganisms spreading from the alveolar process.

4. It can exert a harmful influence on patients suffering from infections in no wise related to the teeth (such as syphilis and tuberculosis).

5. It can exert a harmful influence upon patients ill with functional or organic disease in no wise related to infection (such as toxic goiter, psychosis, etc.)

6. It can cause obscure symptoms such as weakness, nervousness, etc., which can hardly be classified.

DIRECT EXTENSION OF ORAL INFECTION

Root abscesses can break into the antrum of Highmore, giving rise to chronic antrum infection. This infection may involve other sinuses so that serious local disease may result. This in turn may infect other organs and may actually in time result in death.

Local tooth abscesses occasionally (but rarely) involve considerable areas of adjoining bone, giving rise to rather extensive osteomyelitis. It occasionally reaches the dental nerve, giving rise to local and referred pain. This is occasionally difficult for the patient to localize. In one case observed by the writer brain tumor was suspected. Tic Doloreaux does not come in this category and so far as my experience goes, I have never seen a case related to oral infections.

Before the war Vincent's angina was relatively rare except in patients with foul mouths. During the war, however, an organism of high grade virulence was developed so that patients with relatively normal teeth and gums were susceptible. This infection can spread rapidly and cause great destruction not only of gum tissue but of the soft tissues generally in the mouth and throat.

METASTATIC INFECTION

Acute alveolar abscesses can result, through metastatic infection, in an acute infection in almost any tissue and can give rise to chills, high fever, sweats, and other symptoms of general infection. This must always be looked upon as a grave illness.

More commonly systemic invasion is a chronic slow process. The organisms found at the roots of infected teeth are usually of very low virulence. They lie in the body for years doing harm through time rather than through rapid progress. As a rule years, rather than months, are required for the development of the serious systemic illnesses which finally ensue. Furthermore, the organisms do not invade the blood stream continuously in the ordinary case and if so when they do invade the blood are usually killed off by the antiseptic action of the plasma and leucocytes. Harmful systemic invasion occurs usually during periods when resistance is low and this, of course, is frequently the case in patients subject to the effect of oral sepsis for periods of thirty years or more.

Resistance may be lowered in almost any individual by the effect of such conditions as physical or mental strain or fatigue, by unusual exposure to heat and cold, by digestive upsets, lack of proper food, overindulgence in alcohol, opiates, or other drugs, by pregnancy and lactation, and by such debilitating diseases as diabetes, anemia, acute and chronic infectious diseases, etc. If health were always perfect and vitality never reduced the ill effect of oral sepsis would be much less.

Through the work of Rosenau and others and more recently by Hayden, a great number of diseases, chiefly streptococcic in origin, have been reproduced in animals through inoculation with bacteria cultured from the apices of dead and abscessed teeth. The very diseases from which the patients were suffering were frequently reproduced in animals.

Frequently acute diseases, such as acute arthritis, cholecystitis, or nephritis, directly follow a flare up in an infection in the alveolar process.

Finally, many diseases, such as arthritis, chronic pain in the gall bladder region, and disturbances in other organs clear up almost immediately after the removal of infected teeth.

These results all serve to prove that a majority of streptococcic diseases of hematogenous origin can arise through spread of an infection in the alveolar process. The more important of these illnesses are the following: acute and chronic infections in the joints, muscles, and bursae, and tendon sheaths; acute and chronic infections in the eye such as iritis and chorea retinitis; infections in the nerve apparatus, such as neuritis; acute and chronic infections in the heart, such as endocarditis, myocarditis, and pericarditis; in the veins, such as phlebitis; in the serous membranes, such as pleurisy, peritonitis, etc.; in the nervous system, such as spinal myelitis, meningitis, chorea, etc; in the kidneys, such as acute and chronic nephritis and pyelitis; in the gastrointestinal tract and its appendages, such as gastric or duodenal ulcer, cholecystitis, pancreatitis, appendicitis, etc.; in the glands of internal secretion, such as thyroiditis; in the bones, such as osteomyelitis and periostitis, etc.; and finally, infections giving rise to a miscellaneous group of ilnesses, almost unlimited in number, such as herpes zoster, erysipelas, cellulitis, paronychia, etc.

ALLERGY REACTIONS (INFLAMMATORY IN TYPE)

A great many of the ill effects of oral sepsis can be attributed to a condition known as allergy—that is, to a reaction similar to the tuberculin reaction. It is well known that if a person has arthritis due to a certain streptococcus that inoculation with killed cultures of the streptococcus gives rise to three interesting phenomena.

1st. Pain, redness, and swelling at the site of inoculation (local reaction).

2nd. Fever, headache, malaise, etc. (general reaction).

3rd. Augmentation of symptoms at the site of the infected tissues.

In the case of arthritis, this would amount to an increase in the pain, swelling, and redness about the joints. If an infection causing arthritis had its source in the alveolar process, the act of chewing would cause repeated autoinoculation with bacterial products either living or dead and give rise to allergic reactions in the joints. The reaction would be similar to the reaction caused by injection of dead streptococci, namely, an augmentation of joint symptoms. In

this way an acute or chronic inflammatory process can be kept going almost indefinitely even though no new infection gains a foothold in the joint. This is true of infection in other localities such as the appendix and gall bladder. In cases of this sort, removal of infected teeth may not only result in relief from further metastatic infection but also gives relief from the repeated reaction which may constantly aggravate symptoms in relatively quiet infections.

Allergy reactions occur quickly, (within twelve to twenty-four hours) and removal of the source of allergy results in quick relief. It is through this mechanism that an acutely inflamed gall bladder or appendix may follow, within less than twenty-four hours, an acute flare-up about an infected tooth; and it is through this mechanism that relief of pain in an infected tissue, such as the gall bladder, may follow within twelve to twenty-four hours the removal of an infected tooth.

MULTIPLE INFECTION

When a person is afflicted with two or more infections with different organisms, each infection has an effect upon the other, usually to the disadvantage of the patient. In other words, resistance to one organism can be lowered by infection with another organism. It is well known that in patients with tuberculosis an acute infection, such as tonsillitis, does more damage than it does to a normal person and that it is occasionally followed by active progress in the disease, tuberculosis. In fact, a person with tuberculosis may be seriously damaged by any acute or chronic infection. I have been particularly interested in the effect which acute and chronic infections have upon the course of syphilis, especially locomotor ataxia and general paresis. In patients having syphilis, I have frequently observed a negative Wassermann become positive following acute infection such as tonsillitis and latent syphilis become clinically active following such acute infections as tonsillitis, typhoid fever, or an acute alveolar abscess. Furthermore, I have frequently observed in unfavorable cases of tabes dorsalis and paresis that an immediate improvement in symptoms and Wassermann titer often followed the removal of such chronic infection, as bad tonsils or oral sepsis. Sutton has noticed this in staphylococcic infections of the skin, such as acne and furunculosis. I have noticed it in a casual way in chronic infections in the prostate gland, kidney pelvis and even in chronic infections of the tonsils and nasal sinuses. Even infections of the gum, due to Vincent organisms may be favorably influenced by the extraction of an abscessed tooth at the root of which only streptococci were found.

ORAL SEPSIS IN FUNCTIONAL AND ORGANIC DISEASE NOT INFECTIOUS IN ORIGIN

Diseases which are in no wise related to infection of any sort are often seriously influenced by oral infection and are benefited by its removal. Such conditions, for example, as exophthamic goiter, diabetes, and acidosis, manic depressive insanity, gastric neuroses, cardiac arrhythmia, etc.

OBSCURE SYMPTOMS ATTRIBUTABLE TO ORAL SEPSIS

Many obscure symptoms which can hardly be classified seem related to the absorption of toxic products from infection in the alveolar process and often disappear completely after its removal. Such symptoms are nervousness, weakness, loss of weight, pallor, malaise, debility, etc.

If it is granted that the subjected matter herewith presented is true, it can be easily seen that oral sepsis can never be taken lightly. Personally, I think the ills caused directly and remotely by oral sepsis rank in number and severity with the ills caused by cancer, syphilis, or tuberculosis. Oral sepsis differs from the latter illnesses in one important respect, namely, that it can be removed or prevented by ordinary care and skill.

In the earlier days of my experience with this subject I invariably urged the removal of every tooth in which an abscess could be demonstrated by x-ray. I was quickly discouraged with the result of palliative treatment, such as root canal drainage. The occasional good result hardly justified the laborious work, the high cost, and most of all, the uncertainty in outcome. I did not strongly condemn teeth which showed little or no area of rarefaction in dental radiograms except in the case of syphilis and diabetes. Experience, however, and many times sad experience, has led me to believe that a dead tooth, however harmless it may appear clinically or by radiogram, is a poor friend and may sooner or later do a great deal of harm. In one patient, for example, who came to me complaining of numbness in the finger tips, we found a large number of dead teeth, only one of which seemed definitely abscessed. The abscessed tooth was removed with almost immediate disappearance of the numbness complained of. The patient returned after a few months with recurrence of this paresthesia and we found another abscessed tooth. Removal of this gave the same relief as before. This experience was repeated on two further occasions, each time with the finding and removal of a new abscess. On the last occasion, sugar was found in the urine and for this reason the removal of all the remaining dead teeth was urged. There was almost immediate gain in sugar tolerance as well as permanent disappearance of the numbness complained of.

The seriousness of the ills which may follow infection spreading from the alveolar process make the retaining of dead teeth seem unjustified either in health or disease. It is not scientific practice for a dentist to ask a patient if he is well and in case he answers in the affirmative look lightly upon a slight grade of oral sepsis. It is not scientific practice even after a careful medical examination with negative findings to look lightly upon the existence of dead teeth. Dead teeth are a constant menace to good health and their usefulness rarely justifies their retention.

In sick individuals it seems apparent that the removal of dead teeth is a sane procedure. Indications for radical work are particularly urgent in serious diseases, such as chronic nephritis, hypertension, arthritis, cardiac arrhythmia, and especially in patients whose resistance to infection is lowered by such condition as pregnancy, lactation, diabetes, etc., and most of all in patients who have syphilis. In this disease the therapeutic use of mercury and iodides should be given every chance. Mercury and iodides, unfortunately, predispose to infection in the gum and alveolar process so that under their influence a slight degree of sepsis is inclined to enlarge and spread. In the case of ailments so serious as tabes dorsalis and paresis, badly influenced as they are by pyogenic infections, every effort should be made to remove sepsis completely—in fact, the initial effort in the treatment of syphilis which has passed beyond the contagious stage, should be a thorough cleanup of the mouth and throat. This

enables a patient to tolerate mercury and iodides and derive more benefit through the influence of these drugs than could possibly be obtained otherwise.

The existence of oral infections should be taken into account by specialists in every line and the helpful result of the work of careful dentists should be appreciated by all.

THE CONTROL OF PAIN IN ORAL SURGERY

By C. H. Dodge, D.D.S., Chicago, Ill.

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THERE never has been a time when the problems of dental education have been in need of closer scrutiny than at present, for, with every advance in medical science it becomes more evident that the treatment of the diseases of the mouth requires a breadth of training and depth of scientific insight not supplied by the ordinary curriculum of the dental college.

The belief is current that specialization within dentistry will relieve the situation and obviate the necessity of the dentist's becoming a physician. But the belief is not well founded, for the specialist, more than anybody else, requires a deep knowledge of medicine in order that his contributions may show real scientific value and not become mere technically elaborated guess work. The fact remains that the whole subject of oral surgery is grounded on no more firm foundation than dental surgery, and that the holder of a D.D.S. is theoretically and legally fitted to practice his art in all its branches.

One of the first problems that a dental student has to face from the time he first makes his acquaintance with the dental clinic until he leaves the profession is the control of pain.

The dentist's knowledge of medicinal treatment for his patient as a pain reliever and dental man has attained a broader scope than is generally recognized and he today has an important influence for improving the general health of his patients.

A year ago I became interested in the use of a new nonnarcotic analgesic and hypnotic drug allonal, and later presented a paper on this subject,[1] embodying my preliminary observations at the Illinois Post-Graduate Dental Clinic and The Salvation Army Settlement Clinic with the use of this drug.

This new drug represents a chemical combination of a new hypnotic, allyl-isopropyl-barbituric acid and the analgesic, phenyl-dimethyl-dimethylamino-pyrazolon (amidopyrin). Animated by the therapeutic value found in this drug from personal observations at my clinics as well as from reports by Dr. M. A. Burns, Associate in Neurology, Jefferson Medical College, Philadelphia, Pa.,[2] Drs. Sydney Kuh, and F. J. Gerty at the Cook County Psychopathic Hospital, Chicago, Ill.,[3] as well as more Dental reports from Dr. J. Frankel,[4] and Dr. B. Kornfeld,[5] I have gone farther into this subject and more especially as it pertains to elimination of pain in preoperative and postoperative cases.

I may say that for the control of pain allonal has at least proved a very useful drug and has eliminated to a marked degree the use of narcotics in

our clinics. The clinical tests to which it has been put and the class of patients on whom it has been tried show that it is of real value.

Allonal has an effect necessarily on the sensory and motor nerves according to dosage. Therefore it should be remembered that when the pain is severe and a large dose is required the patient should be instructed to remain in a recumbent posture. We have noticed a few cases of vertigo, and a few are found who have an idiosyncrasy, but these are the exception and should not be considered as harmful symptoms, but rather the exception.

Conservation of the teeth by every resource of art is not the most important factor in dentistry. Teeth still of service for mastication may require removal. Indiscriminate devitalization of the teeth by the dentist favors the multiplication of pathogenic bacteria and this with neglect of mouth hygiene makes infected teeth the rule. Many of the dentist's patients are healthy, know little illness and do not come in contact with physicians. Such individuals should be informed of the true significance of mouth infection.

In our clinics however most of our work is oral surgery and a necessary percentage of our operations have been the so-called flap or open view method for removal of cysts, impacted teeth, preparation of the mouth for denture, radical maxillary sinus operations, removal of tumor growths, etc. Patients suffering from the above troubles are also much disturbed with accompanying pain but by careful technic pain can be reduced to a minimum.

To start with the method employed is to give the patient one or more allonal tablets from twenty to forty minutes before the operation, taking into consideration the mental state of the patient as well as the actual severity of the pain experienced.

Immediately preceding a flap operation the head of the patient is covered with a sterile towel, and a sterile sheet is placed over the patient. If block anesthesia is to be used the eyes are covered with sponges over which a towel is placed. The mouth is closely packed with gauze sponges; the tip of tongue turned up, sponges are made into rolls with ends placed under the upturned tip of tongue in a semicircular position and in numbers sufficient to prevent hemorrhage from entering the throat, at the same time leaving the throat free and teeth exposed.

With the pack thus in place a 3½ per cent iodine bath is given the mucosa, the teeth, and the face, followed by a sodiphene bath to remove the iodine stain and to avoid an iodine blister, and thus preparing as nearly a sterile field as can be expected in the oral cavity.

If a general anesthetic is required we use ethylene oxygen, the preparation recently brought to our attention by Dr. Arnow B. Luckhardt of Chicago University and which has been used with marked success on now thousands of cases.

In the open view operation when the flap is turned back all overhanging edges and spiculae of bone should be removed, avoiding irritation of the mucoperiosteum, at the same time bearing in mind the importance of preserving a scaffolding for the support of the mucoperiosteal flap.

Before draping the flap into position it is important to freshen the edges

to facilitate wound repair. This point was most forcibly emphasized by Carel-Dakin during work with world war patients.

In approximating the edges of the mucoperiosteum the blood clot is retained in position, which is Nature's best dressing, and normal wound repair should follow, avoiding the so-called painful dry socket which is what might be called nothing more than weathered bone.

Less absorption in alveolar process takes place in cases that have been operated in this manner, and the ideal condition obtained thereby is conducive to comfort to both operator and patient in restoring the mouth either with a fixed bridge, removal bridge or full denture.

With the flap retracted great care is taken to recover every chip of bone. The reasons are obvious as a chip of bone lost and working under the periosteum is one of the most prolific pain producers. Likewise an open view facilitates the enucleation of the granuloma or cyst.

No irrigations are done during the operation or before closing the wound. The packs are left in place until the blood clot has formed, and instructions given to avoid irrigating the mouth for twenty-four hours. However, after the first day gentle irrigations may be started using normal saline solution.

After the operation hot applications of boric acid solution or epsom salts are applied and held in place by four-inch head bandages. These are changed every two hours during the awakened hours for newly heated ones.

At the time of changing the pack we use hot turkish towels for fifteen minute periods changing continuously for the purpose of inducing hyperemia. The hot compresses are then again bound into position with the head bandages to be left on for two more hours when the above directions are repeated.

This will keep the blood flowing in the soft tissue, avoiding congestion and collection of pus.

In extreme cases we use hot body packs and strong catharties.

The reason for these methods is to induce rapid elimination of the bacterial shower produced at the operation.

For further elimination method the patient is given a saline cathartic, one glass of water is given every hour as a diuretic and a liquid diet is ordered.

One or more tablets of allonal are given one hour or more after the operation and repeated as needed.

During the course of a year more than two thousand dental and oral surgical cases varying in degree from ordinary dental troubles to the most severe and complicated oral surgical cases are treated at the clinic and we have at our command the best facilities for studying our cases after leaving the clinic.

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DEPARTMENT OF
DENTAL AND ORAL RADIOGRAPHY

Edited By
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THE TECHNIC OF ORAL RADIOGRAPHY

By Dr. Clarence O. Simpson, St. Louis, Mo.

PHOTOGRAPHIC PROCESSES

(*Continued from page* 441.)

THE preceding chapters have described methods of registering the latent image on the film after which chemical processes are required to disclose it and produce a visible record. These distinct phases of radiography are equally important, for as either the projection of the image or the subsequent treatment of the film is incorrect the diagnostic value of the radiographic record is proportionally impaired.

However the darkroom technic is more mechanical in character, is not subject to the great variations, and requires less skill and judgment than the operative technic. This portion of the work may be entrusted to a careful, conscientious assistant, but the radiodontist should be a master of all the details of the procedure to properly train assistants and maintain the requisite standard of production. Since the treatment of the films after exposure is a chemical process, all steps should be performed with accuracy and freedom from contamination. It is easier to be habitually careful than to locate a cause of imperfect negatives and replace them with improved ones.

Facilities.—The first essential for the convenient and correct development of films is a suitable room. Makeshifts such as developing cabinets and clothes closets are not conducive to efficient results, or the routine use of radiography. The space and facilities should be proportionate to the volume of radiography, but some requirements are imperative. Light must be excluded, the illumination must be safe for the manipulation of radiographic films, and the ventilation must be adequate. Running water, refrigeration, work shelves, storage cabinets, and provision for entrance and exit without admitting light are indispensable for convenience. To test the safety of a darkroom lamp, place a coin on a film of the most sensitive emulsion used,

and lay them slightly closer to the lamp than the films are held for manipulation and inspection. After this exposure to the colored light for five minutes develop and fix the film. If any fog is visible around the area covered by the coin, the illumination is unsuitable. To correct the fault, place additional red paper on the window of the lamp or replace the electric bulb with one of less power, and if there are any cracks from which white light escapes cover them with black adhesive tape. The test should be repeated until the illumination is safe.

Developing Methods.—The development of the image as the first step in obtaining a permanent record of the examination offers a greater variance in methods than any of the subsequent procedures. The time and temperature method is generally recommended, and there are some advocates of the

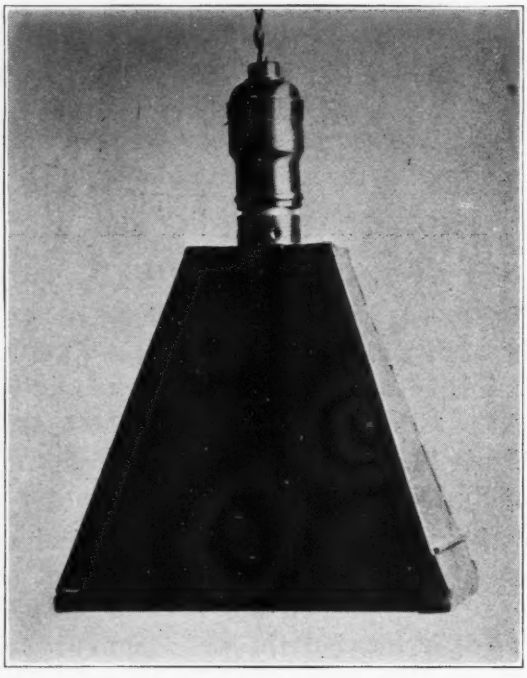

Fig. 1.—A darkroom lamp which directs the red light downward and is suitable for development by inspection.

factorial method, but the inspection method is used and advised by the writer as a practical means of producing uniform, diagnostic negatives.

The time and temperature method is the development of all films the normal time for the existing temperature of the solution. Although this is theoretically correct, it is impracticable in application because of the difficulty in accurately judging the penetration and calculating the exposure required. Correct exposure in intraoral examinations may vary 50 per cent for different subjects, and 100 per cent for different regions of the same subject. Since there is no precise means of determining this variation in advance, one or more test exposures of each region would be required to obtain the desired uniformity in negatives. The weight and age of the subject, and the thickness of the alveolar process are less important factors in calculating

exposure than the type of bone, which cannot be determined without a radiability test.

The factorial method is the computation of the normal development time by multiplying the time required for the first appearance of the image by the numerical factor of the developing agent used. For example, the numerical factor of hydroquinone is 5, so if the image appeared in 55 seconds the development would be complete in $5 \times 55 = 275$ seconds or 4 minutes and 35 seconds. This is sound chemistry but a foolish application, because it requires almost constant inspection of the films in the early stage of development when they should be submerged in the solution, and a mental registry and calculation of the development which becomes more intricate with the number of films in the developing solution. This method has long been discarded by photographers, and has little practical value except for experimental purposes.

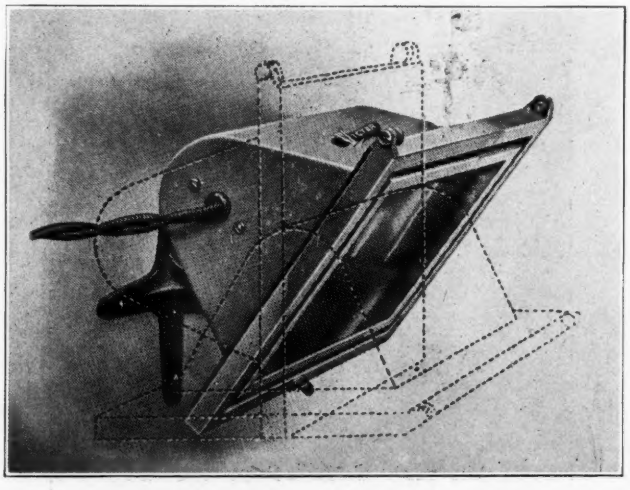

Fig. 2.—A darkroom lamp from which the red light may be directed in different directions.

Development by Inspection.—The inspection method offers the opportunity of improving underexposed negatives and correcting overexposed negatives in the course of development. To apply the method to intraoral films they should be attached to separate holders instead of grouped on a holder, and inspected by reflected light on the nonemulsion side during the latter stages of development. The films should be submerged in the developer and vigorously shaken to remove air bubbles, with an occasional movement to circulate the solution left until about two-thirds of the normal development time has expired, then held with emulsion side down under a red light to observe the shade. A little experience will enable one to judge the speed of development and one or two additional inspections should suffice to stop the development when the desired density is reached. The periods of inspection should be as brief as possible so the absence of the films from the solution will not be prolonged.

In radiography, as in photography, the safe exposure rule is to "expose for the shadows" or give ample exposure. To insure uniform radiographic

negatives the exposure and penetration should be slightly in excess of the preliminary calculation, for which compensation if necessary may be made by reduction in the time of development. Contrary to the emphatic statements of professed authorities, radiographic negatives may be given an excess exposure of 25 per cent and the development correspondingly decreased without loss of diagnostic quality. When operating with the principle of ample exposure and the inspection method of development there are rarely additional exposures required because of incorrect exposure. If the exposure should be slightly deficient it may be "forced" within a safe limit to increase the density, and if excessive the development can be stopped at the desired density.

This system is not intended to encourage careless excessively long exposures, but to correct the results of unavoidable miscalculation. Constant

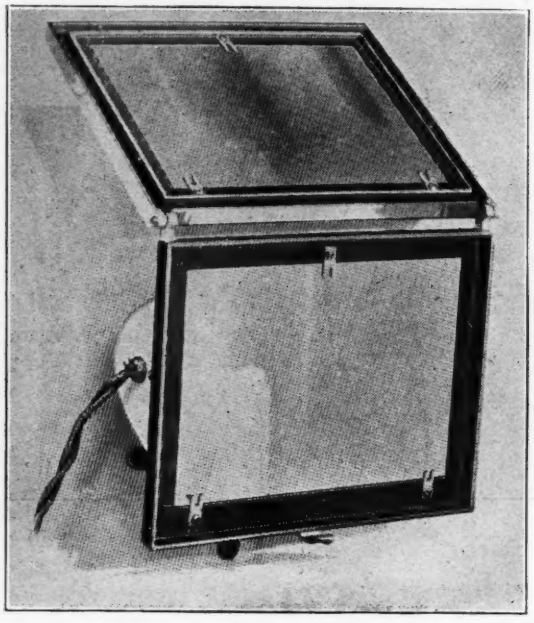

Fig. 3.—The lamp shown in Fig. 2 opened as an illuminator with diffused white light.

effort should be applied to accurately calculate exposure, but since no one has demonstrated that this can be done, a practical method of dealing with the exposure problem is gratifying. When the films are being developed as the examination proceeds, the subsequent exposures and penetration can be gauged by the report of the dark room assistant on the development time and the appearance of the first two or three films. Other writers on this subject have implied that the radiographer or the assistant was not sufficiently expert to employ the inspection method, but the average assistant can be trained within three days to produce reasonably uniform negatives. If after a few days' training an assistant does not demonstrate satisfactory progress, she probably is deficient in shade perception and unfitted for service in a radiographic practice.

Special emphasis is indicated regarding the temperature of the develop-

ing solution. Since 65 degrees is the temperature at which developing agents function most efficiently, the solution should not be used below 64 degrees or above 67 degrees. The temperature should be stabilized at 65 degrees before development is begun, and means such as a water-bath for the developer container provided to maintain this temperature during prolonged use. An accurate dairy thermometer which floats and may easily be read should be conveniently placed and conscientiously used.

Density of Negatives.—The reference to the desired density suggests a discussion of the suitable density for radiographic negatives. In the earlier period of oral radiography, the customary directions for viewing intraoral films was by strong transmitted light. This was necessary to view the extremely dense negatives which were produced, and the effect of this custom is still evident. Negatives so dense as to require strong transmitted illumination are lacking in contrast because, the detail is obscured in the highlights, the shadows are fogged by scattered radiation, and consequently the halftones are almost obliterated. While in the attempt to make all negatives dense, doubtless many were impaired by chemical fog from forced development. In the abscence of a published standard of negative density, it may be described as that in which the detail of the entire image is revealed by the light reflected from unglazed white paper nine inches from a shaded 75 watt lamp. Negatives of this density may be satisfactorily viewed toward the sky or suitable illuminators, but are not dense enough to view toward the sun or undiffused artificial light.

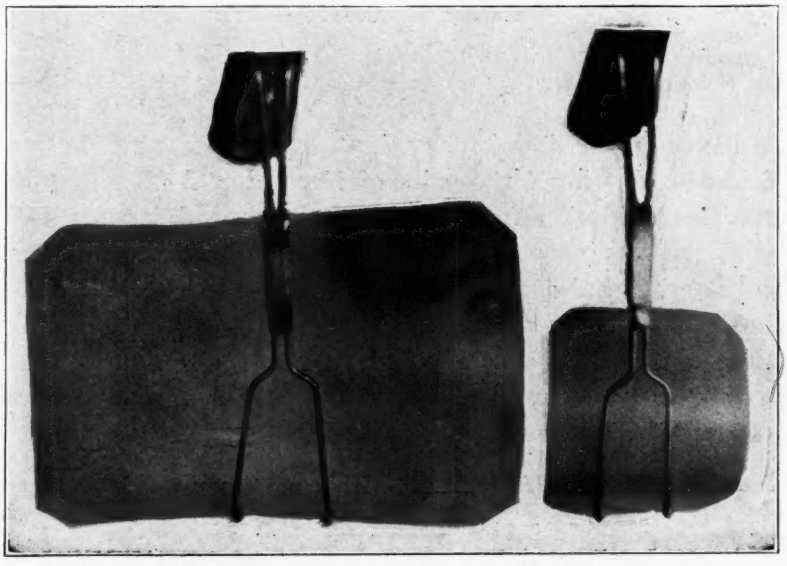

Fig. 4.—Developing holders suitable for individual development. They do not mar the films, but protect the emulsion side which is turned toward the holders.

Developing Formulae.—The following developer formula is a modification of one obtained from Dr. R. Ottolengui. The rapid action of this solution is a great advantage when films are developed individually and during the course of the examination. It gives the maximum contrast and detail,

with a delightful quality for radiographic negatives. The disadvantages of the solution are the rather rapid oxidation when exposed to the air, and the caustic property which contraindicates contact with the skin. The oxidation may be controlled by covering it with a float or transferring it to a stopped bottle of the exact capacity, and the caustic action from unavoidable contact may be neutralized with the acid bath.

DEVELOPING FORMULA FOR INTRAORAL FILMS

STOCK SOLUTION

Distilled Water	50 ozs.
Potassium Hydroxide	8 ozs.
Sodium Sulphite	8 ozs.
Potassium Bromide	1 oz.

DEVELOPING SOLUTION

Water	4 ozs.
Elon	10 grs.
Hydroquinone	40 grs.
Dissolve and add	
Stock Solution	2 ozs.

Normal development time is one minute at 65° F. This six ounce quantity is sufficient to develop forty pairs of No. 1 dental films, but should not be used after the oxidation from the air has changed it to a coffee color. The elon and hydroquinone may be weighed in advance and retained in No. 10 veterinary capsules ready for use. Avoirdupois weight is used in compounding photographic formulae.

When the development has reached the desired stage the films should be quickly rinsed in water, and placed in a neutralizing and hardening bath for 30 to 60 seconds.

NEUTRALIZING AND HARDENING FORMULA

Water	6 ozs.
Chrome Alum	1 oz.
Acetic Acid (28%)	1 oz.

Then place the films in the fixing solution.

DEVELOPING FORMULA FOR DOUBLE-COATED FILMS

Distilled Water (warm)	128 ozs.
Elon	128 grs.
Sodium Sulphite	12 ozs.
Hydroquinone	525 grs.
Sodium Carbonate	6 ozs.
Potassium Bromide	100 grs.

Normal development time is 5 minutes at 65° F. The films should be placed in the neutralizing and hardening bath for 30 to 60 seconds and then removed to the fixing bath.

Tank and Tray Methods.—Probably better negatives will be produced by the tray method of developing double-coated films, unless the volume of work demands the greater capacity of a tank. The advantages of the tray method are individual development, the use of a small quantity of fresh developing solution easily brought to the correct temperature, the oppor-

tunity of keeping the solution in motion by gently rocking the tray, and the facility of observing the progress of development except in the final stages without removing the film from the solution. In tray development the films should be submerged in water and turned before being placed in the developing solution to moisten the surfaces and promote an even application of the developer. During the process of development the tray should be gently rocked in different directions and the film quickly turned over about once a minute so the action of the solution will be uniform.

The disciples of the tank method will vociferously contend that all this can be more easily accomplished in a tank. So it could excepting the inspection, but it is rarely done. When a large quantity of developing solution is put in tank service, it is generally used until exhausted and it progressively deteriorates after the first day's use. There is difficulty and delay in bringing a large quantity of solution to the correct temperature, and consequently a temptation to laxity in thermal requirements. When several films are being developed, the manipulation of them before and after development interferes with the constant agitation of the solution which is indicated for efficient action. The tank method is necessary for quantity production, but quantity production is often accomplished at the sacrifice of quality.

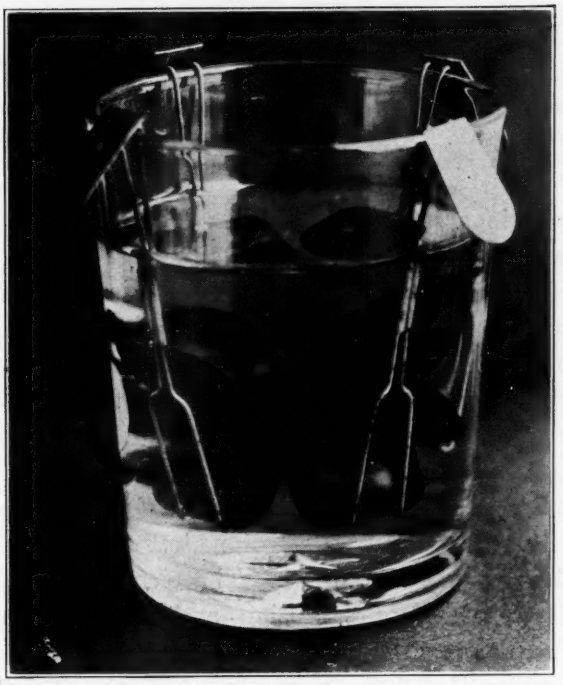

Fig. 5.—A convenient container for rapid developing solution, accommodating two pairs of films in 6 ounces of solution. This capacity will develop the films as rapidly as they can be manipulated.

Fixation.—After development, the next step in securing a permanent record is the fixation of the image. There is no choice in this process excepting a slight variation in the formulae regarding the acidifying and hardening agents. Sodium thiosulphate, commonly called hypo, is universally used

to dissolve the undeveloped silver bromide from the negative, and this is the essential ingredient of the fixing solution. An acid to neutralize any alkali carried from the developer, a hardening agent, and a preservative are usually included in the formulae. The following formula has all the desirable properties within the chemical limitations. A more rapid fixation would be advantageous, but a material increase in the proportion of the hypo would produce the opposite effect. Obtaining the maximum hardening of the emulsion during fixation would dispense with the necessity for a separate hardening bath, but this is possible only by treatment before fixation.

FIXING FORMULA

SOLUTION A

Water (warm)	96 ozs.
Hypo	36 ozs.
Sodium Sulphite	2 ozs.

SOLUTION B

Distilled Water	32 ozs.
Chrome Alum	3 ozs.
Sulphuric Acid	2 drs.

Add the sulphuric acid slowly. When both solutions are cool, slowly add solution B to A while vigorously stirring the latter. The fixing bath should be thoroughly agitated before use as there is a tendency for the hypo to settle in the solution. Films should remain in the fixing solution fully twice as long as required for them to clear, or about ten minutes for radiographic films. The thermal requirements of the fixing solution are not so exacting as those of the developer, but the temperature should be between 55 and 70 degrees.

A given quantity of this fixing solution is effective for twice the service of an equal quantity of developing solution, but should be discarded before there is a marked slowing of its action. The clearing of the emulsion is not proof of the efficiency of a fixing solution, and the excessive use of the bath will result in the subsequent discoloration of the negatives. The lights may be turned on when the films have been placed in the fixing solution without waiting for the emulsion to clear.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

The Importance of Early Recognition of Dental Disorders in Children. D. C. Lyons (Jackson, Mich.). The Dental Cosmos, May, 1924, lxvi, 5.

The author has examined about 5,000 children of school age and has reached some interesting figures. The average number of permanent teeth erupted at the age of 10 is 16, the extremes being 7 to 28. Under the circumstances it is therefore very difficult to speak of normal and abnormal. Carious deciduous teeth were universally present. But these wide limits are not at all physiological for they depend more than anything else upon precocious loss of deciduous teeth whether spontaneously or from extraction for any cause. The chief pathological consequence of premature loss of the first teeth is malocclusion and two out of every three cases of malocclusion are due to this causal factor. Malocclusion in turn is a prominent causal element in the production of various dental disorders including pyorrhea. Hence the importance, first, of conserving the deciduous teeth as long as possible; and second, of correcting the consequences of precocious loss of these teeth at the earliest possible moment.

The Focal Infection Theory and Malpractice Suits. Editorial in Dental Items of Interest, June, 1924, xlvi, 6.

While it is admitted that infection about a tooth, obeying general pathologic laws, can both extend locally and cause disease at a distance, it is by no means proved that dental infection is a dominant factor in the causation of various types of chronic disease. At present the opinions held in explaining the symptoms in a given case must be regarded as largely personal.

Malpractice suits against dentists are common enough but only recently has one been brought against the professional man for having failed to remove infected teeth. He was to have pulled certain teeth as a preliminary to fitting a denture, but through some alleged imperfection in the plate the patient, a man, refused to complete the payments. When the suit was filed, for $10,000, the dentist was surprised to find that the damage claim was based on failure to extract eight infected teeth, which had "caused certain systemic ailments." Since many damage suits are won through the allega-

tion and proof of neglect, a good case might be made out for the plaintiff, judging from the extensive literature of focal infection. Even disbelievers in focal infection would be slow to admit that infected teeth are of any possible use, that is, in the absence of any conservative attempts to sterilize them. The editor does not know whether radiographs were taken by the doctor or by anyone else. This is not customary in extractions preceding the fitting of artificial dentures. Quite aside from the merits and demerits of such a suit the entire principle of the suit is unjust for it would tend to confuse neglect with sober refusal to operate, based on the author's private judgment.

The Relation of Faulty Diet to Dental Disease. K. Thoma (Boston). Oral Health, May, 1924, xiv, 183.

The author cites various facts of interest from history and anthropology which appear to show a connection between diet, decay of the teeth and infection. Thus while some of the native African tribes are quite free from pyorrhea others show this affection. A careful study of diet showed that the nonimmunes live on cassava which forms a sticky mass that adheres to the teeth. The immunes did not eat cassava at all. It may also be shown that the appearance of pyorrhea among the old Greeks and Romans coincided with the introduction of elaborate cookery and especially of warm cakes and breads which adhere to the teeth intimately, whereas the old dry bread of the ancestors, made of coarse flour, was not adherent but the reverse—it tended to keep the teeth clean.

At the present time the effect of a diet rich in sweets tends to lower the appetite for plain and simple foods which are often insipid. The mode of preparing food for the table also eliminates a certain amount of necessary mineral food and vitamin.

The area of the beginnings of modern cookery in Greece and Rome was the first century A.D. and the methods of preparing food were imported from Asia Minor by returning soldiers. Not only pyorrhea but caries became common. In discussion of Thoma's paper MacCallum of Montreal spoke of the excellent retention of sound teeth by the Scotch pioneers of Canada who lived on oatmeal, cheese, milk, fish and mutton. But mere restriction of diet to carbohydrate cannot of itself cause caries, for some of the lower class Chinese subsist almost entirely on millet, yet have no teeth troubles.

The Influence of the Nutrition on the Teeth. W. E. Deeks (New York). The Dental Cosmos, April, 1924, lxvi, 4.

The author, who is physician to the United Fruit Co., gives his experience in the following summary: The causes of dental anomalies are bound up in heredity, the diet and nutrition and other factors which may be summed up under environment. Nutrition counts double here because it plays a rôle in heredity. Protein should be of animal origin, fats may be of either animal or vegetable origin, carbohydrates from tubers, cereals, green vegetables and fruits. Cereals should be from whole grains of wheat, oats and maize and a diet of these is superior to one of bread, biscuit, cake, macaroni, etc. In

like manner we should eat fresh, ripe fruit in preference to sugar and sweets, ice cream, sweet desserts, etc. It is true, however, that very hard manual laborers can utilize a considerable amount of sweets, where a sedentary man would be injured thereby. As far as possible we should follow the more primitive diet of our ancestors.

Nervous Accidents of Dental Origin Which Simulate Tetanus. J. Rouveix (Clermont Ferrand). La Revue de Stomatologie, May, 1924, xxvi, 5.

It seems difficult today to doubt that buccodental sepsis plays a rôle in general pathology. One of the leading French advocates of this doctrine is Tellier of Lyon, who is candid enough to admit that a perfectly scientific demonstration of the truth of the hypothesis is still lacking. We must therefore continue to accumulate data in the hope that the last link of proof may sooner or later be forged. The author reports two cases, in the first of which the patient presented himself with rigidity of the left masseter muscle, which in two days had passed to absolute trismus. There was also a painful tic in the corresponding cheek. Seven years before the patient, while at the front, had received a shell wound in the left side of the head and this was long in healing. It was impossible to state whether this old wound bore any relation to the present symptoms.

The patient developed several symptoms of tetanus which seemed to point to a partial and subacute form of this disease comprising spasms in the left leg and difficulty in swallowing. There was fever at night of around 103. The diagnosis was made of cephalic tetanus and serum was injected. On account of the trismus it was of course impossible to examine the mouth until the patient had been anesthetized; it was then learned that a tender point and slight ulceration existed opposite the left upper wisdom tooth. Both the left upper and lower of the third molars were extracted, although sound and of good position. On coming out of the anesthetic the symptoms began to improve and by next day the patient was almost well. The diagnosis of atypical tetanus might have been upheld if another similar case had not presented itself, forcing the author to accuse a simple trismus from nervous irritation, in the second case with more evidence of buccal infection.

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EDITORIALS

A Plea for Clean Journalism

DURING the past few years there has been a growing tendency in the world of journalism for cleanliness and decency that did not exist, to any great extent, in former years. While it is a fact that a few newspapers and magazines have always advocated clean and decent journalism, there has been a greater number of publications that have catered to the whims of certain individuals, and have followed a spectacular plan termed "yellow journalism." Dental publications, serving, as they do, a very limited number of individuals, should follow the clean journalism policy.

We believe the majority of men in the dental profession prefer clean editorials. Readers of dental journals are too busy to be interested in personal quarrels and attacks upon individuals who may not agree with an

editor. A dental journal has a function to perform; every effort should be made toward following a policy which will benefit the dental profession.

We do not believe that editors should agree with everything that is done by prominent men in the dental profession or by organizations, because if they did, the journals would soon become mere publications of tabulated events with no constructive function whatsoever. An editor is perfectly free to state his opinion and to object to any policy that he believes is wrong; but in doing so, he should present logical arguments. For an editor to criticize simply because he does not agree with certain individuals or organizations, and fail to present any reason for his adverse opinion, is indeed poor policy. It is equally poor for an editor to make a statement which may be his personal belief unless he can bring forth some reason for his statement.

In a recently published dental journal with a large circulation we find an editorial which contains so many misstatements of the fact, and which is far from what we think decent journalism should be, that we are going to quote the editorial in full:

"The American Dental Association

"Iowa and New York rebelled on the raise in dues of the American Dental Association.

"So far as I can see the whole fight was a political move on the part of Harvey Burkhart and Roscoe Volland.

"It is unthinkable that the dentists of New York and of Iowa would secede on account of one more dollar per year dues. The fact is the dues of the American Dental Association should be ten dollars per year.

"Dr. C. N. Johnson acted as peacemaker and restored the erring members to the fold.

"The House of Delegates should declare two vacancies in the board of trustees and make it generally known that ward politicians are—persona non grata.

"The last time I had occasion to call attention editorially to Dr. Burkhart's political maneuvers he objected because I did not use his name—so here it is.

"The self-respect of the New York Dental Society and the self-respect of the American Dental Association will greatly be enhanced by the retirement of the gentleman from Rochester."

It is very evident that this editorial was written primarily because the editor of the journal did not agree with Harvey Burkhart, who is a member of the Board of Trustees of the American Dental Association. The editor has either been very poorly informed or has taken no pains whatsoever to learn the facts of the case. One of the most untruthful statements contained in the editorial is that New York and Iowa objected to the increase of dues in the American Dental Association because of two persons, Harvey Burkhart and Roscoe Volland. Out of justice to the gentlemen named, we are positively informed that the movement in both New York and Iowa in objecting to the action at Cleveland was started by members of the profession without

consulting either Harvey Burkhart or Roscoe Volland. In Iowa the entire movement was under way before Dr. Volland was consulted or informed that the profession was opposed to the action taken at Cleveland. It is equally true that the officers of the Dental Society of the State of New York took such action as they did before informing or consulting Dr. Harvey Burkhart in regard to their attitude.

The objection of New York and Iowa to the increase in dues in the American Dental Association was not the result of the activity of the gentlemen named; the majority of the profession objected to the manner in which the supposed raise of dues was carried out at Cleveland. Secondly, no sane reason has yet been given why the dues in the American Dental Association should be raised from $2.00 to $4.00. Thirdly, they objected because of the improper manner in which the amendment was put over to carry with it the voting of large sums of money for certain purposes without its being demonstrated that said purposes required any such amounts of money.

The editor of the publication in question, not only insulted Doctors Volland and Burkhart, but also insulted the entire dental profession of New York and Iowa, by the statement that, "It is unthinkable that the dentists of New York and Iowa would secede on account of one more dollar per year dues." No one in New York or Iowa ever mentioned seceding. The entire movement was taken along legal lines and was a protest against the illegal action taken by the House of Delegates at Cleveland.

We believe the time has not yet come when it is possible for a group of men to put through a program as was done at Cleveland which is illegal and contrary to the Constitution and expect every one to consent without objecting to the illegal action. Furthermore, we beg to inform the distinguished editor of the journal in question, that the dues were raised from $2.00 to $4.00 instead of "an increase of one dollar."

It is certainly improper and poor taste for an editor of a dental journal to suggest that the "House of Delegates should declare two vacancies in the Board of Trustees." First, because the House of Delegates is perfectly capable of declaring what it wishes to do, and furthermore, if the learned editor would consult the By-Laws of the American Dental Association he would learn that the House of Delegates has no power to declare a vacancy.

The writer of the editorial tells us that the dues of the American Dental Association should be ten dollars a year. We pause to ask, Why ten? Why not fifty? He has given no more reason for ten dollars than we have for fifty. In fact, the officers of the American Dental Association gave no reason why the dues should be any more than they have been in the years past. The Association has been able to operate on $2.00, so why raise to $4.00? However, the answer to that question will be decided in Dallas, but in the meantime, we hope something will be done to impress upon dental publications that they must follow the same rules of decency that govern the acts of individuals.

ORTHODONTIC NEWS AND NOTES

British Society for the Study of Orthodontics

NOTICE CONCERNING PRIZES FOR OPEN COMPETITION

1. The Society offers the following prizes for competition; they will be awarded triennially.

2. The first award will be for the three years ending December 31st, 1926, for which the prizes are as follows:

(1) A medal executed in silver and an honorarium of 50 guineas;
(2) An honorarium of 20 guineas;
(3) An honorarium of 10 guineas;

and in future such sums as the Council may from time to time determine.

3. The subject for the essays to be submitted in competition for the prizes for the triennial period ending December 31st, 1926, is: "The Macroscopic Changes which Normally Occur in the Jaws and Teeth of Man and in Their Mutual Relations, from Birth to the Complete Eruption of the Second Permanent Molars."

4. The prizes are open to competitors of all nationalities.

5. The prizes will be awarded by the judges to be appointed by the Society. The essays must be presented in the English language. The Council reserves the right to withhold any prize if such essays are not considered of sufficient merit.

6. Every essay must have a motto or device and must be accompanied by a sealed envelope containing the name and address of the author, and having on the outside the motto or device corresponding with the motto or device on the essay.

7. Each essay must be addressed to the Hon. Secretary of the British Society for the Study of Orthodontics, and delivered at No. 11 Chandos Street, London, W.1, not later than 4 o'clock p.m. on the 31st December, 1926.

8. The manuscript prize essays and every accompanying drawing, preparation, etc., shall become the property of the British Society for the Study of Orthodontics.

9. Every unapproved essay, with any accompanying drawings, preparations, etc., will be returned to the author thereof at his request.

10. The Society reserves the right to publish the prize essays within eighteen months of December 31st, 1926, but if the Society does not publish them within that period, the right of publication shall revert to the authors on condition that the latter add to the essay, immediately following the title, the words:

"An Essay awarded a prize by The British Society for the Study of Orthodontics in open competition."

11. A copy of this notice will be sent to all applicants making written request for it, addresses to the Hon. Secretary, The British Society for the Study of Orthodontics, 11 Chandos Street, London, W.1, England.

The American Society of Orthodontists

The Twenty-fourth Annual Meeting of the American Society of Orthodontists will be held in the new Atlanta-Biltmore Hotel, at Atlanta, Ga., April 14, 15, 16 and 17, 1925. (Mark off the date now.)

Walter H. Ellis, Sec'y-Treas.,
397 Delaware Avenue,
Buffalo, N. Y.

Clinton C. Howard, President,
Doctors Building,
Atlanta, Ga.

New York Society of Orthodontists

The fall meeting of the New York Society of Orthodontists will be held the afternoon and evening of Wednesday, October 8, 1924, at the Hotel Vanderbilt, Park Avenue, New York City.—William C. Fisher, Sec'y.

Chicago Dental Society Annual Clinic and Meeting

The midwinter clinic and meeting of the Chicago Dental Society will be held at the Drake, January 21st, 22nd and 23rd, 1925.

A splendid program is in preparation which will equal, or perhaps surpass any of the previous efforts of the Society. Of course all members of the American Dental Association are cordially invited and are most welcome.

Information may be secured from any of the following Chairmen:

Chas. W. Freeman, 25 E. Washington St. Program Committee.

F. G. Conklin, 523 S. Crawford Ave. Clinic Committee.

Hugo G. Fisher, 25 E. Washington St. Exhibit Committee.

Hotel reservations should be made direct with the particular hostelry you prefer. Certainly the Drake would be most convenient.

The customary reduced railroad rates will be available.

For general information address M. M. Printz, Secretary, 25 E. Washington Street, Chicago, Ill.

National Alumni Chapter of the Psi Omega Fraternity

The annual meeting of the National Alumni Chapter of the Psi Omega Fraternity will be held at the Southland Hotel, Dallas, Texas, Monday, November 10th.

The executive committee will meet at 10 A.M.

The general meeting will start at 2 P.M., and everyone is urged to be on hand, promptly.

A stag banquet will be held at 7 P.M. Reservations must be made by 4 P.M. Big surprise for those who attend.—Lloyd S. Huhn, 3166 Lincoln Ave., Chicago, Ill.

Class of International School of Orthodontia, June 9-July 17, 1924

The following is a list of the orthodontists completing the course at the International School of Orthodontia, June 9-July 17, 1924.

Dr. A. H. Davis, Plumville, Pa.
Dr. M. E. Cook, Austin, Minn.
Dr. Geo. L. Turner, Bartlesville, Okla.
Dr. F. W. Hollister, Portland, Oregon.
Dr. Geo. B. Parker, Watertown, N. Y.
Dr. Chas. S. Adelstein, Cleveland, O.
Dr. C. D. Osterhout, Clay Center, Kans.
Dr. L. B. Williams, Dallas, Texas.
Dr. J. V. Siegmund, Austin, Texas.
Dr. A. P. Horton, Dallas, Texas.
Dr. J. W. Jones, Chattanooga, Tenn.
Dr. A. K. Nakagawa, Lincoln, Nebr.
Dr. E. J. McKenna, Boston, Mass.
Dr. D. P. Nolting, Albuquerque, New Mexico.
Dr. J. M. Gorman, Emporia, Kansas.
Dr. A. K. Spearman, Texarkana, Ark.

The American Society of Dental Radiographers

The annual meeting of the American Society of Dental Radiographers will be held at the Adolphus Hotel, Dallas, Texas, Friday and Saturday, November 7 and 8. All dentists interested in radiography are invited to attend.

Arnott A. Moore, President
131 Allen Avenue
Buffalo, N. Y.

Martin Dewey, Secretary
501 Fifth Ave.
New York, N. Y.

The American Dental Laboratories Association

The American Dental Laboratories Association will meet in Chicago on September 15, 16 and 17, 1924.

A program is now being arranged consisting of an all star cast.

Clinics and papers of interest to laboratory technicians and dentists will be arranged and this should be by far the most interesting and instructive meeting that has been held by this organization.

The definite program will be announced at a future date and formal invitations will be sent to all laboratories in the United States and Canada.

The following are the officers of the American Dental Laboratories Association:

J. C. Schwartz, Pres.,
Equitable Bldg., St. Louis, Mo.

E. L. Mueller, Vice Pres.,
1809 Capitol Ave., Omaha, Nebr.

W. H. Schroll, Secy.,
5 So. Wabash Ave., Chicago, Ill.

I. J. Dresch, Treas.,
Nasby Bldg., Toledo, Ohio.

Members of Council

J. C. Schwartz,
Equitable Bldg, St. Louis, Mo.

Henry Boos,
608 Nicollet Ave., Minneapolis, Minn.

Samuel G. Supplee,
1 Union Square, New York, N. Y.

E. L. Mueller,
1809 Capitol Ave., Omaha, Nebr.

B. I. Martinez,
308 Lowry Bldg., St. Paul, Minn.

Notes of Interest

Dr. H. C. Pollock and Dr. Leo Shanley, orthodontists of St. Louis, Mo., are, with a party of boys, spending the summer in the ruins of the Cliff Dwellers of northern New Mexico and Arizona. They report a number of burial excavations completed by an expedition headed by the Colorado State Historical Society also having witnessed weird Indian dances by the Indians of the Southwestern United States.

Dr. Russell E. Irish has moved his office from Dormont, Pa., to 610-611 Fulton Bldg., Pittsburgh, Pa.